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BLUE JAY

JUNE 1998



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EDITOR'S MESSAGE

The *Blue Jay* typically publishes new articles that have been specifically written for our journal, although I sometimes select an article that has been published elsewhere. Generally I do this when I need to get broader coverage and more balance in the content. On several occasions I have used material written by members of the Saskatoon Nature Society and were originally published in the Saskatoon Sun. The SNS members are to be congratulated for the high quality and interesting subjects of these weekly articles. As editor I really appreciate the SNS allowing *Blue Jay* to use them for the benefit of a wider audience. (Does any other society in the prairie region have its members write articles for a local paper, that would similarly benefit *Blue Jay* ?)

Sometimes I recycle an article because I believe it fills a particular need. Such is the case in this Issue. "Game Farm Development in Saskatchewan: Should We Be Concerned?" by Stuart Slattery and Jantina Portman raises some important questions. I urge you to read this article and consider the question it raises.

With this issue we move to a new publisher and printer. The previous publisher, Canadian Plains Publishing, has served *Blue Jay* well for many years. The quality of the journal's organization, page layout and technical accuracy are a tribute to Brian Mlazgar and his staff at Canadian Plains. Our thanks go to these people for their professional service and being part of *Blue Jay's* history and success.

I am fortunate to have the support of several experienced Associate Editors. These people have done yeoman service for many years. While all have agreed to continue as needed, a couple have said they would like to retire when new associate editors can be found. I therefore encourage you to consider joining the *Blue Jay* team or approaching a friend who would be willing to contribute. The job is not onerous - indeed I have been accused of ignoring these people by not sending ENOUGH work! - and you will become part of a highly respected undertaking. I certainly enjoy my role as editor, although there is usually some unforeseen problem that has occurred with every issue so far. We have managed to overcome these glitches and learn in the process.

My life would be easier, though, if I were two issues ahead. So I encourage you to keep the photographs, articles, notes and letters coming. I also need fillers - one or two lines of interesting information that fills in the white space between articles. Is there anyone with a source of good nature trivia?

Sincerely,

Roy D. John

SUMMER TANAGER AT VALEPORT

FERNE LAWRENCE, 405-2301 Lorne Street, Regina, SK S4P 2N1

The Ducks Unlimited field trip to Valeport 27 May 1997 was not leaving the Royal Saskatchewan Museum parking lot until 7:30 pm. Lucy Eley and I, who had believed we were to meet at 7:00 pm, decided to leave earlier. On arrival at Valeport we saw Burt and Lois Gibson, who told us they had seen a different bird. They described it as much larger than a warbler with an orange-yellow breast and large beak which was darker on top and lighter below. Where they viewed it the illumination would have been behind them and on the bird. It was near the top of a tree about 30 feet up the path that borders the water.

Lucy and I walked what we believed would be a distance of 30 feet or more without seeing anything unusual. Since someone was fishing ahead of us, we cut through the trees to the picnic area. There with binoculars we watched for any signs of bird activity in the trees. We noticed a bird, similar in colour to the female Northern (Baltimore) Oriole, but mostly hidden by foliage. As more of the bird appeared, it had a very orangish breast without the sheen of an oriole; the beak was longer than a grosbeak and rather thick. When it fanned out its tail a little, the tail looked to be a light rusty brown. We were not aware of any wingbars. Lucy recalls it as having a rather uniform appearance and that the beak was dark, but not real dark. (Some of the darkness might be attributed to the time of day and that we were facing west.)

When we had our best view of the

bird, the rest of the group drove in. With Lucy keeping track of the bird, I went to ask them to come and help in identification. Just as we returned, the bird flew into a nearby willow, but must have gone farther as we could not locate it there. That night we believed it was probably a tanager that we four had seen.

The Golden Guide,"Birds of North America", states that the female Summer Tanager is orange-yellow; Peterson's "Eastern Field Guide" describes the female being much the colour of the female oriole with the underparts more orange than the female Scarlet Tanager. On checking their Golden and National Geographic field guides, Burt and Lois Gibson saw that the shape of the bird had the dark shading above the beak of the female Summer Tanager were like those of the bird they had viewed. We now conclude it was a female Summer Tanager we had seen.

Though bird guides have shown the Summer Tanager with a light yellow beak, an article by William J. Walley, Dauphin, Manitoba (*Blue Jay* 51:47, 1993) describes a first-year male, whose beak was grey with light yellowish edges.

The "Audubon Society Master Guide to Birding" by John Farrand Jr., Third Volume, mentions that the beak of both sexes of the Summer Tanager is pale in breeding plumage and darker at other times of the year. This bird could have been in transition plumage and not yet in breeding plumage.

The "Atlas of Saskatchewan Birds" by Alan R. Smith, 1996, lists previous Saskatchewan sightings of the Summer Tanager, all in the spring, at Frontier, 7th May 1976; Canora, 11th or 12th May 1993; and Regina, 13-16 May 1993.

The Regina sighting in May 1993 of an immature male Summer Tanager was viewed by many birders and also photographed. I saw it 14 May on the north side of Wascana Lake, and also

on 15 May on the south side of the lake, the day of the Regina Spring Bird Count.

When talking to Bob Luterbach about the sighting at Valeport, he asked that I record it for the Blue Jay. I would like to thank him for providing information from the "Audubon Society Master Guide to Birding" and his related comment. I would also like to thank Fred Lahrman for the information from the "Atlas of Saskatchewan Birds".



Young Mallard on Labrador (dog)

LEROY AND MYRTLE SIMMONS, RECORD-BREAKING WINNIPEG BIRD BANDERS

C. STUART HOUSTON and MARY I. HOUSTON, 863 University Drive,
Saskatoon, SK S7N 0J8

A small and unassuming city lot sits across the street from the Little Seine River in the Winnipeg suburb of St. Vital. Here a two-storey home, augmented by large nest boxes for Wood Ducks and Eastern Screech-owls, was built by LeRoy (known to his friends as "Roy") Simmons in 1947. Apart from a transfer to Flin Flon, 1950-1953, with Western Grocers, 170 Egerton Road remained the residence of the Simmons until they died. From 1963 until early 1978 it was the bird-banding station of Roy Simmons (evening and weekends) (Fig. 1), but mainly of Myrtle Simmons (Fig. 2), who banded birds during Roy's working hours. As Myrtle said in her privately-published reminiscences, *A Love Story*, "I sure had to learn a powerful lot about bird identification in a big hurry." Daughter Dawn did much of the banding. Myrtle kept the banding

records and typed the reports in triplicate, until October 1977 when she became paralysed on one side from the rupture of an intracranial aneurysm. Without Myrtle's help, Roy ceased all banding in the spring of 1978.

In migration and for most of the winter the lot was alive with birds, particularly finches, grosbeaks, and record-breaking numbers of redpolls and Pine Siskins. The feeders were loaded with seeds, suet and peanut butter. All birds were banded in the Simmons' yard except for 71 Black-crowned Night-herons banded near Oak Point on Lake Manitoba in 1967.

Roy Simmons was born in Winnipeg on 7 January 1912 and died there on 6 May 1996. His wife, Myrtle, née McArton, was born in Winnipeg on 20 June 1910

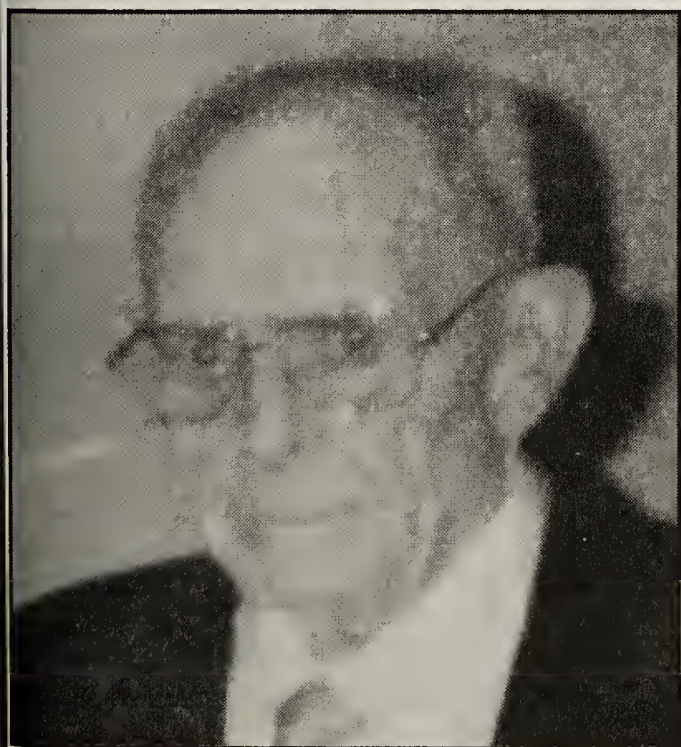


Figure 1. Leroy T. Simmons

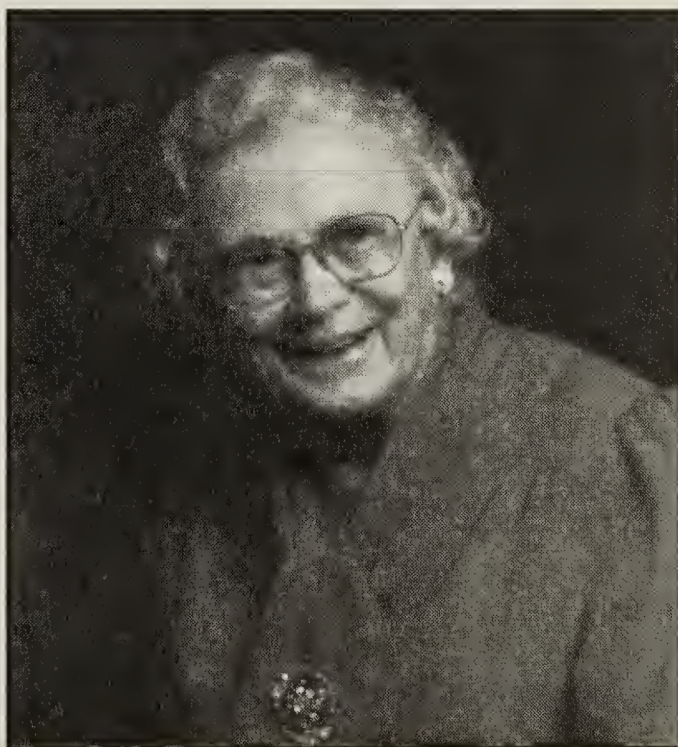


Figure 2. Myrtle Simmons

and died there on 29 November 1995. Married on 13 July 1940, they first lived at Maymont, Saskatchewan, where Roy was a grain buyer for three years until he joined the Royal Canadian Air Force; he served in India in 1944 and 1945. I remember Mrs. Priestly's pleasure when she gave me Roy's article for typing: "A Sparrow Hawk Pet." (*Blue Jay* 1:21, 1943).

The Simmons together banded a remarkable 53,527 individuals of 67 species over 15 years. These included

22,504 Common Redpolls, at the time tops for the continent, 9,736 Pine Siskins, and 8,722 Purple Finches (Table 1). On a migration flyway, they caught birds banded elsewhere to the south and east of them, and these other banders retrapped a roughly equal number of Simmons-banded birds. Such records greatly augmented the chance finding of tiny bands on dead birds, and raised the results above those normally expected elsewhere in the western half of this continent.

Table 1 - Summary of Bird Banding Records by Leroy Simmons
1963-1978 (Species with recoveries or more than 50
individuals banded)

Species	# Banded	# Recov	% Recov
Black-cr Night Heron	71	0	0.0%
Am. Kestrel	2	1	50.0%
Mourning Dove	44	1	2.3%
Purple Martin	74	0	0.0%
Blue Jay	907	34	3.7%
Black-cap Chickadee	454	3	.07%
White-br Nuthatch	144	1	.07%
Swainson's Thrush	67	0	0.0%
Am. Robin	99	3	3.0%
Brown Thrasher	16	3	18.8%
Bohemian Waxwing	66	0	0.0%
Northern Shrike	16	1	6.3%
Rose-br-Grosbeak	295	4	1.4%
Fox Sparrow	418	1	0.2%
Lincoln's Sparrow	116	0	0.0%
White-thr Sparrow	1843	1	0.1%
White-cr Sparrow	113	0	0.0%
Harris' Sparrow	649	0	0.0%
Slate-col Junco	1864	1	0.1%
Common Grackle	59	10	16.9%
Baltimore Oriole	48	1	2.1%
Pine Grosbeak	42	1	2.4%
Purple Finch	8722	46	0.5%
Red Crossbill	748	17	2.3%
Common Redpoll	22504	26	0.1%
Hoary Redpoll	830	0	0.0%
Pine Siskin	9736	13	0.1%
Am. Goldfinch	122	1	0.8%
Evening Grosbeak	3127	69	2.2%
38 other species	331	0	0.0%
Total	53527	240	0.4%

Purple Finches banded by Roy and Myrtle, travelling south from Minnesota and Wisconsin down through states on both sides of the Mississippi River to Texas and Louisiana, demonstrated the migration pathway. In spring the finches went north and west through Saskatchewan and Alberta, one being killed by hitting a picture window at Smithers, British Columbia. The Simmons were fortunate in being able to recapture 23 Purple Finches banded elsewhere by other banders, including nine originally banded in Minnesota, six in Wisconsin, four in Michigan, two in Iowa and one each in New Jersey and Tennessee. Another from Minnesota was found dead near their banding traps. The speed of migration is known for three finches banded in Minnesota: by Jane C. Olyphant at Lake Elmo, 605 km in 7 days; by James P. Ludwig near Bemidji, 320 km in 18 days; by L.S. Ryan near Little Falls, 470 km in 11 days. In turn, 21 of the Simmons finches were caught by other banders: 11 in Minnesota, 3 in Iowa, 2 in Kansas, and one each in Wisconsin, Michigan, Illinois, Oklahoma and Arkansas; the latter finch covered 1555 km in 58 days (Fig. 3). Besides those caught in bander's traps or nets, eight hit windows, seven of them fatally, and four were shot, one as a scientific specimen. One of each species was killed by a highway vehicle, a dog, a cat, and ten were found dead without identified cause.

Fifteen of the 26 recoveries of 25 Common Redpolls were in the greater Winnipeg area; five hit windows, five were found dead, two were in traps, two killed by cats, and one was shot. Apart from one shot at Ridgeville, MB the month after it was banded, the nine distant birds were encountered in subsequent winters. Common Redpolls banded by the Simmons were caught by other banders in Minnesota (Bemidji at 24 mos. and Little Falls at 11 mos.),

Wisconsin (Chippewa Falls, see below), and Ontario (Toronto, same bird caught twice, at 23 and 24 mos.). A redpoll banded at St. Paul, MN, was found dead in Winnipeg. Single redpolls were found dead at Meadow Lake, SK at 11 mos., Arborg, MB at 1 y and Oak Lake, MB, at 3½ y. and one was killed by a cat west of Gatzke, MN at 24 mos., and one hit a window at Hebron, Illinois at 20 mos. A nearly 5-year-old Common Redpoll, banded 30 March 1969 and retrapped at Chippewa Falls by bander C.A. Kemper on 18 March 1975, was the oldest of the 488 recoveries from 231,179 redpolls banded in North America until that time.

Of nine banded Pine Siskins caught at 170 Egerton Road, mainly in mist nets, five had been banded in Minnesota, and one each in North Carolina, Pennsylvania, Michigan and North Dakota. Two Pine Siskins banded near Little Falls, MN, made the 470 km trip in 13 and 15 days. Simmons-banded Pine Siskins were caught by other banders in Wisconsin, New York, Tennessee, North Carolina, Arkansas, Alabama, and one off course in California at a direct-line distance of 2405 km. The numbers on one of these tiny bands was read by telescope at a feeder in Michigan. One hit a picture window, one was caught by a cat, and four died of unknown causes (Fig. 4).

Captures of 26 Evening Grosbeaks banded elsewhere again identified the west to east rather than north to south migration of this species: one from Quebec, two each from Connecticut and New York, one from Ohio, five from Wisconsin, and four from Minnesota. The Simmons also caught ten banded within greater Winnipeg by Harold Hosford and one by David Hatch. In turn, a slightly greater number (35) of their grosbeaks went elsewhere to be caught by other banders, 20 of them in

Minnesota, 10 in Manitoba, and one each in Maine, New Jersey, Michigan, Wisconsin, and Alberta. An unusual movement occurred in 1966, when grosbeaks banded in Winnipeg on 8 March, 7, 19 and 25 April, and 5 May, all went south to be caught by Minnesota banders on 25, 29, 25, 27 and 26 May, respectively, in five different Minnesota localities, the last of these moving 130 km in 21 days. In early 1977, another took a similar southerly path from Winnipeg to Walker, Minnesota, 365 km in 13 days, 16 to 29 April. In addition to those reported by banders, six hit windows, two were shot and two caught in traps. Another 20 were found dead and four died of miscellaneous causes (Fig. 5). Their oldest Evening Grosbeak, at 12 years and 7½ months, banded 22 March 1966 and found dead of unknown causes in Michigan on 17 November 1978, was nearly three years short of the oldest bird in the banding office files.

Of 10 recoveries (a very high rate of 16.9%) of Common Grackle, four were shot and five simply "found dead" of unknown causes. One was killed by pesticide poisoning in Winnipeg at 7½ years. Among those shot, one was in Louisiana the same year as banded and another was in Minnesota the year after banding.

The Blue Jay recovery rate was relatively high (3.7%). The two oldest were killed by a cat, and found dead, respectively, at 8 and 9½ years. Three moved south up the Red River valley, two to Minnesota (one was shot and one injured) and the third was found dead on the North Dakota side of the river four months after banding. A jay banded on 6 August was caught due to disease on 30 December and released near Victoria, Texas, after having travelled 2355 km. This is supposedly a non-migratory species! As well, the Simmons retrapped a Blue Jay banded in

Winnipeg by David Hatch.

Of 17 Red Crossbill recoveries (2.3%), all were recovered within a year of banding, 16 in Manitoba and one that hit a window in Minnesota. A Mourning Dove was shot in South Dakota. Found dead elsewhere were a Harris' Sparrow in Nebraska, a White-throated Sparrow in Arkansas, a Slate-colored Junco in Minnesota, and an American Robin in Iowa, all recovered within a year of banding. Rose-breasted Grosbeaks were recovered within greater Winnipeg at 1½, 2½, and 5 years, and in North Dakota at 3½ years.

An American Kestrel was killed when hit by a car on the highway along Atikameg Lake, northeast of The Pas, 330 km NNW from the banding site. Two recoveries of Brown Thrasher, one at 3½ years, and three of Black-capped Chickadee were of birds found dead in Winnipeg, as were one of two Harris' Sparrows and single recoveries of Pine Grosbeak, American Goldfinch, Northern Shrike and White-breasted Nuthatch. A Baltimore Oriole was brought in by a cat and a Fox Sparrow hit a window.

Roy's closest friend was the bird artist, Angus Shortt. During Roy's spare time, he made beautiful wood carvings and painted cartoon murals at the Children's Hospital. It is a credit to both Roy and Myrtle that, though both were reticent and not given to attending meetings, they were jointly presented with "The Wildlife Conservation Award" at a luncheon in the Manitoba Legislative Building in November 1986. Two years later the Manitoba Naturalists Society awarded Roy an honorary membership. Though the Simmons were too modest to publish their results, their achievements are unparalleled among western Canadian banders.

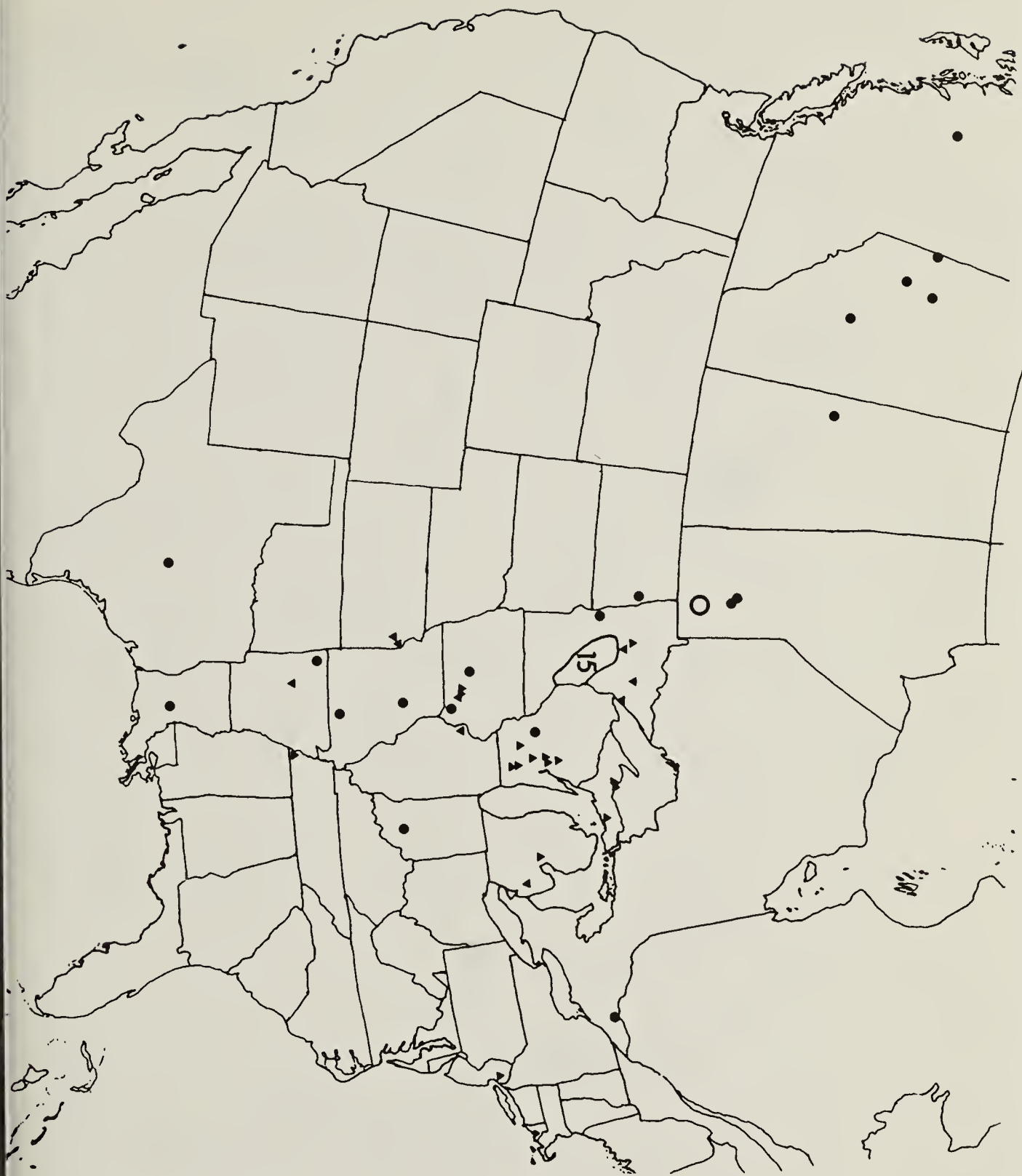


Figure 3. Purple Finch encounters. The open circle O marks Winnipeg. Closed circles ● represent recoveries of finches found dead. Upright triangles Δ represent sites of other banders whose birds were recaptured in Winnipeg. Inverted triangles ▽ represent finches banded in Winnipeg and retrapped elsewhere by other banders. There were 15 encounters, close together, within east-central Minnesota. Finches spread northwest after they reach Winnipeg.

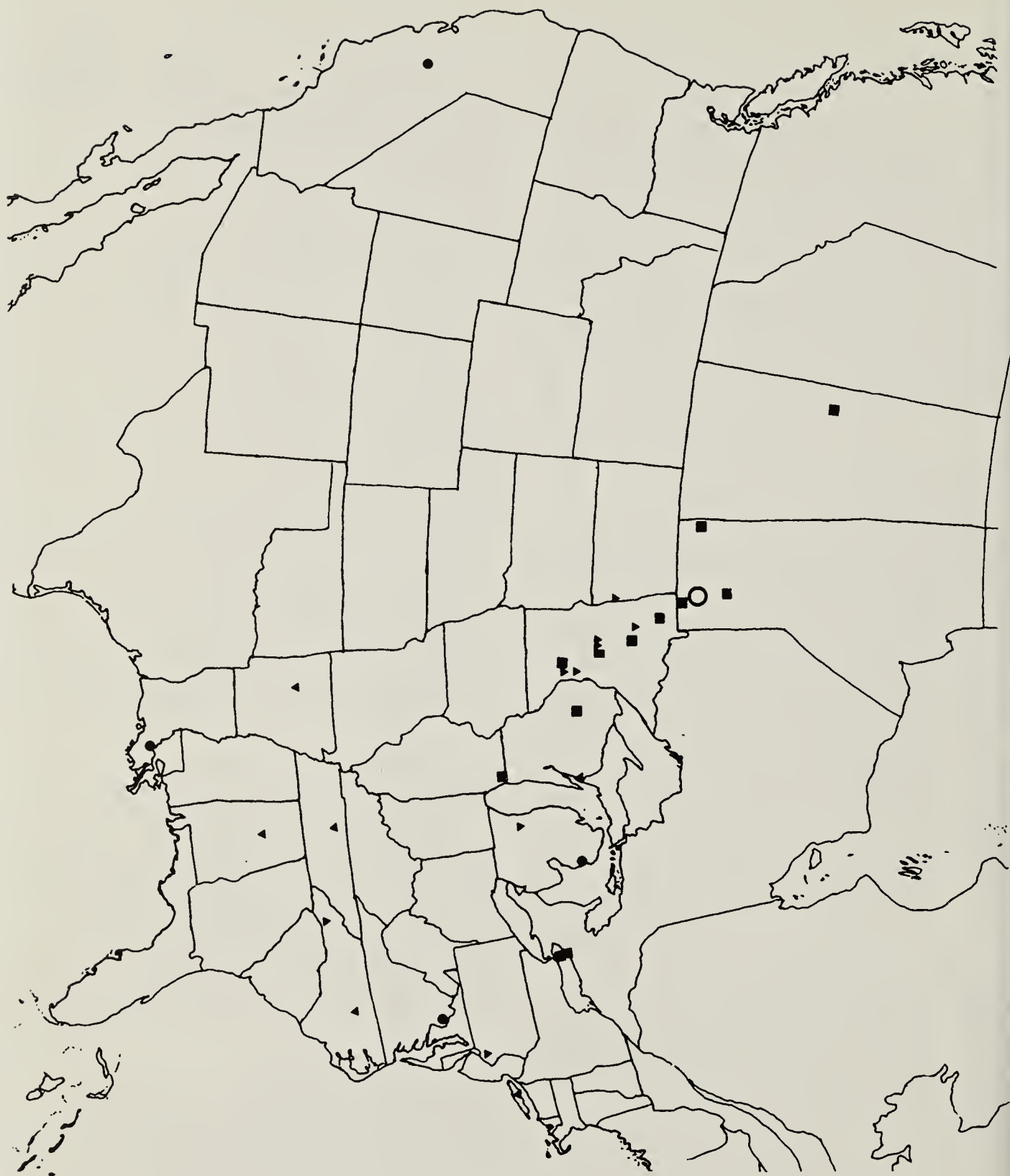


Figure 4. Common Redpoll encounters. Squares ■, south almost to Chicago and east to Toronto). Pine Siskin encounters, circles ●. Upright triangles ▲ represent Pine Siskins banded elsewhere and retrapped in Winnipeg; inverted triangles ▼ represent Pine Siskins banded in Winnipeg by Simmons and recovered elsewhere.

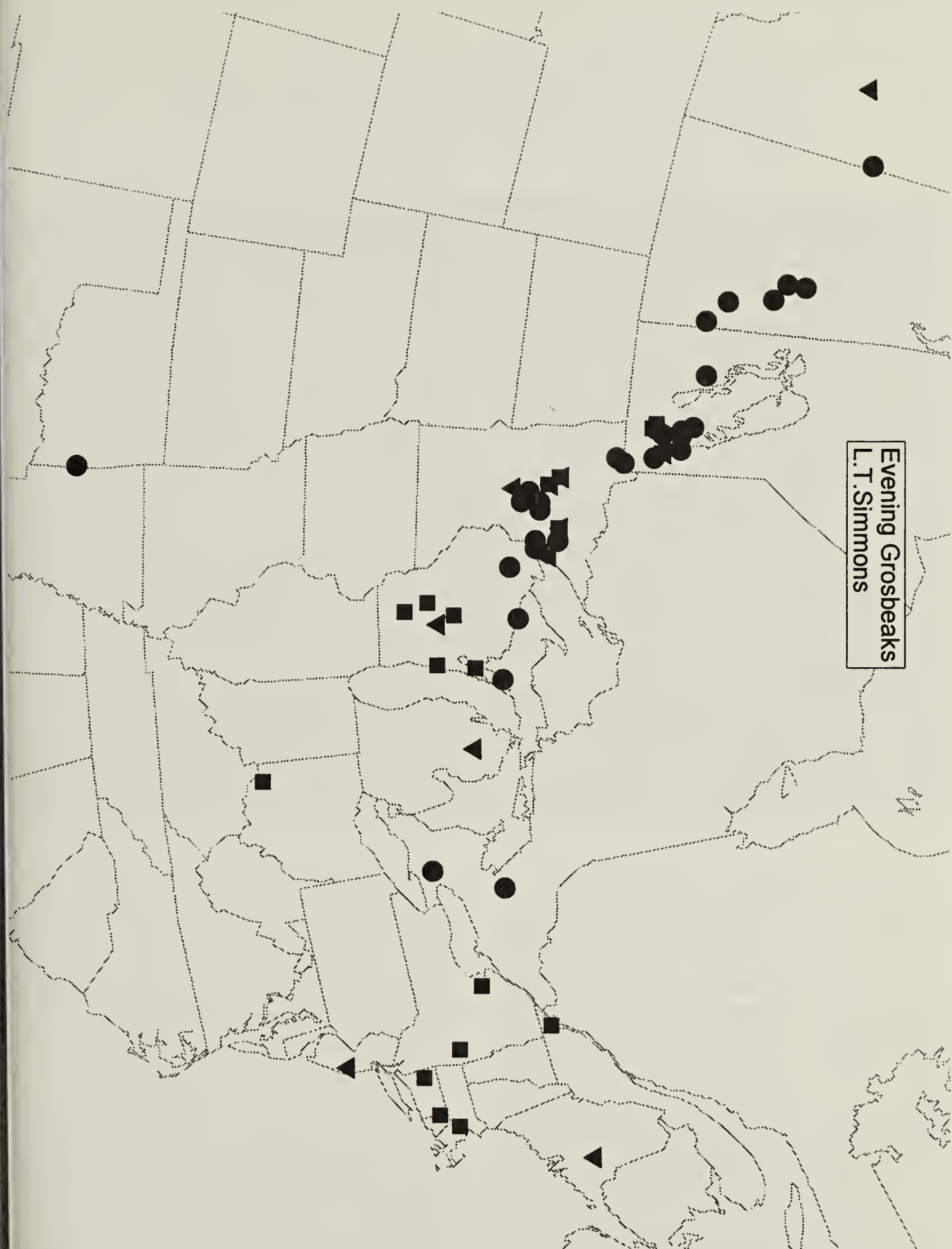


Figure 5. Evening Grosbeak encounters. Circles ●, birds found dead; inverted triangles ▽, grosbeaks banded in Winnipeg and recovered elsewhere; squares ■, grosbeaks banded elsewhere and recovered in Winnipeg. Note the west to east direction of migration, typical of this species.

NORTH AMERICA'S LARGEST SHOREBIRD - HAVE YOU SEEN IT?

ROSS D. DICKSON, #303, 9510 - 79 Street N.W., Edmonton, AB T6C 2R9 and
GERARD W. BEYERSBERGEN, Canadian Wildlife Service, #200,
4999-98 Avenue N. W., Edmonton, AB T6B 2X3



G.W. Beyersbergen

This shorebird is easily identified by its large size and long down-curved bill. Its arrival in western Canada each April is well-documented. Beyond this general information, there are few published Canadian-based accounts about the ecology, population status, or migration of the Long-billed Curlew (*Numenius americanus*). Whether you have observed one curlew, or a flock, we would like to receive your observation (see details in the last paragraph).

On 11 August 1997, the authors found several scattered groups of Long-billed Curlews feeding in a native prairie pasture beside Highway 36, west of Brooks, Alberta. We watched the

birds for about 10 minutes, and each counted 82 curlews when they flushed due to highway traffic noise. The pasture showed evidence of recent grazing, with most grass height less than 10 cm.

Large flocks of curlews in Canada are seldom reported in the literature. A Saskatchewan status report listed only four flocks of at least 100 birds; Ardath, Saskatchewan, 27 July 1980 (140+); Cypress Hills-Frenchman River, Saskatchewan, 19 August 1976 (at least 100); Medicine Hat, Alberta, 2 August 1920 (100); and Many Island Lake, northeast of Medicine Hat, 8 August 1920 (100)⁷. Large spring records are recorded for Alkali Lake, British Columbia, 4 April 1968 (100), and, in the

Lethbridge area (May Species Count), 28 May 1978 (103)^{3,6}.

Field biologists indicate recent sightings of curlew staging, prior to migration, may be both rare and spectacular. A flock of 120 Long-billed Curlews was observed on a gravel bar on the Bow River, NE of Hays, Alberta 7 July 1989 (U. Banasch, pers. comm.), 70+ at Pakowki Lake, Alberta, 2 August 1996 (W. W. Smith, pers. comm.), and 129 immature curlews northeast of Leader, Saskatchewan 29 July 1997 (A.R. Smith, pers. comm.).

Historically, the Long-billed Curlew could be seen in large flocks during migration over much of the continent². Over-hunting, in the early part of the century, may have sharply reduced numbers of curlews, but today the continuing loss of breeding habitat may be the major obstacle to population growth. Nesting habitat requirements vary across their range but curlews prefer short grass with little or no shrub cover. Curlews formerly nested in western Manitoba and southeastern Saskatchewan but are considered extirpated, as a breeding species, in these areas. Most Canadian curlews now breed in southwestern Saskatchewan and southeastern Alberta. West of the Rockies, the range is restricted with the largest numbers in the Chilcotin-Cariboo area of central British Columbia.

The Long-billed Curlew has been given a "Vulnerable" status by the Committee on the Status of Endangered Wildlife in Canada (C.O.S.E.W.I.C.) mainly because of habitat loss due to agricultural practices⁴. Alberta includes the species on its Blue List of species which may be at risk, also indicating that data is limited¹. Although curlews are difficult to census, the Canadian population is currently estimated at 6500

birds⁵. Typical "shorebird" surveys focus on wetlands, thus they seldom record curlews whose breeding habitat requirements do not include water⁹. The only standardized census technique currently used is the Breeding Bird Survey which has estimated an annual population decline in Canada of 1.2% from 1980 through 1996⁸. In 1995-96, curlews were reported on only eight Canadian BBS routes, all in Alberta, where that provincial population trend indicates a decline of 2.9% per year. Neither decline is statistically significant because of the small number of routes, but the species is declining in the eastern portion of its breeding range⁸.

Wintering data of Canadian curlews is totally lacking. The only banding recovery was a bird banded, 20 June 1941, near Rosebud, Alberta and recovered in April 1944, near Plainview, Texas (Bird Banding Office, Canadian Wildlife Service). Do all Canadian prairie curlews migrate to Texas or do a proportion winter in California? A review of the Christmas Bird Count data from 1987-1996, published in *American Birds/Field-Notes* (National Audubon Society, Washington, D. C.), showed a Texas/Gulf Coast wintering population of about 1,400-2,450 curlews, compared to a California total which fluctuated between 4,200 and 10,600 birds for the period. It must be noted that Christmas Bird Count data is unreliable for estimating population trends because data collection methods are not standardized and all potential wintering sites, including those in Latin American, are not covered.

Data on the Canadian population is currently being collected as a component of other projects, primarily by the Canadian Wildlife Service. These include a project of extra BBS survey coverage in Alberta and Saskatchewan to census endemic grassland species

(B. Dale, pers. comm.). Adult curlews are banded at their nests during a Marbled Godwit, Willet and Long-billed Curlew study in the Brooks, Alberta area (C. Gratto-Trevor, pers. comm.). Participants in projects on other prairie species, such as the Loggerhead Shrike census, will be solicited to collect curlew information (B. Johns, pers. comm.).

Bird-watchers can help by recording ALL encounters with curlews and documenting information such as number of birds, age if possible, location (longitude/latitude), date, habitat type and behaviour (pairs, foraging, defending young). This information should be sent to:

Gerry Beyersbergen, Canadian Wildlife Service, #200, 4999 - 98 Avenue NW, Edmonton, Alberta T6B 2X3 or by email gerard.beyersbergen@ec.gc.ca.

Acknowledgment

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OSPREYS NEST SUCCESSFULLY DESPITE CONFLICT WITH BALD EAGLES

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For the past several years, Ospreys have used a nest built by them on a Manitoba Hydro substation structure at Grand Marais, Manitoba (Fig.1), thus attracting the attention of numerous birders and the general public.¹ In April 1997, a pair of Bald Eagles arrived before the Ospreys and appeared to take over the Osprey nest. Informants told me that for several days, beginning April 26, a battle ensued between the Bald Eagles and the Ospreys, the latter diving down on the eagles. Note that Bald Eagles have even been known to attack Osprey nestlings.⁷

Ultimately, the Bald Eagles did not use the Osprey nest (first built in 1988 and added to every year), but up to the third week in May the eagles were reported attacking the female Osprey while she

was sitting in a new nest built about 200 ft. away. Initially, under pressure from the eagles, the Ospreys began building a second nest atop a nearby energized hydro pole, whereupon the Department of Natural Resources collaborated with Manitoba Hydro and immediately erected a new pole with a nest platform for the birds. It has been noted that "the Osprey habit of carrying long wet sticks to the top of hydro structures has caused lines to trip out and even set fire to the tops of the structure....The potential for injury to birds themselves is very high."⁸ According to Rod Cotton, Natural Resources, the new wooden pole is 35 ft. in height, with a wooden platform 4 x 4 ft. on top (Fig.2). About 20 ft. away, a heavy wooden beam was attached at right angles and about 10 ft. from the top of a live hydro pole to serve as a



Figure 1. Old Nest

Ernie Taylor



Figure 2. New Nest

Ernie Taylor

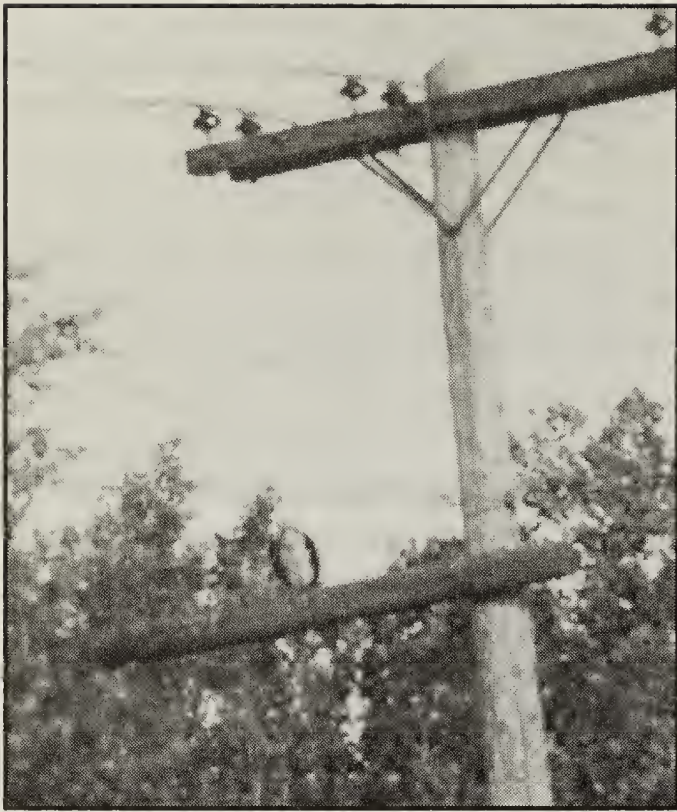


Figure 3. Perching post across from new nest.
Ernie Taylor

perching post (Fig.3). Other structures installed specifically to benefit nesting Ospreys have been described by various authors.^{3,5,8,9}

On June 1 and 2, I found the female Osprey sitting on the new nest which was comprised of large, heavy sticks built on top of the new pole platform. The new nest was rather shallow in comparison with the old nest. The female appeared restless and I wondered if she was turning the eggs. Godfrey states that incubation takes 32-33 days (up to 38 days in Europe).⁴ On June 9, it was reported that the female was still sitting. It may be noted that while both male and female Osprey share in incubation, it appears that only the female sits at night.² On June 28 and July 1, one young was observed being fed. Gerald Jones, who had spent several hours on July 7 observing the nest, reported that the male came with a fish and sat on the edge of the nest, then gave the fish to the female. She partook and fed the young, then the male picked up the remains and flew



Figure 4. Ernie Taylor

away. He sat on the nearby perching post for a long time, apparently guarding the nest. Three young were in the nest on July 20.

The Ospreys were now, apparently because of the growing nestlings, making the nest larger. I saw the three fair-sized young at 1830 hr. August 7. The female was perched on the rim of the nest and "kee-kee-kee" calls could be heard coming from the young, but the male continued to perch across the road on the perching post. At 1050 hr., August 10, the male came with a fish and the female fed the young ones (Fig.4). At 1900 hr., I watched for 20 minutes, but no male came; the female was perched on the edge of the nest. One large wing of a young bird could be seen flapping several times. I was informed that on August 25 three young were still being fed at the nest. Gerald Jones was present on August 31 when all three fledglings (Fig.5) left the nest and flew about a mile down the road. Jones said it was a thrilling and exciting sight! This family of Ospreys was last



Figure 5. Adult male and 3 young.

Gerald Jones

seen at the nest site on September 21.

Brown reports for the Osprey: "Contrary to the case in the majority of birds of prey, the nest still continues as a strong family link even when the young have become free-flying."² He notes further that with both parents hunting, from three to five fish may be brought to the nest daily. "When one comes in with a fish it is taken to the eyrie and then one or more of the young will come gliding in from a perch nearby to share in the meal. Also for some days after first leaving the nest it may be used by all the young as a roost."²

With the installation of five additional poles by Manitoba Hydro, a second pair of Ospreys also nested in this area in 1997. This second nest, which I was able to observe on June 1 and 2, was in a wetlands area in Grand Beach Provincial Park. The nest pole in this instance was 30 ft. high, with a 35 ft.

perching pole about 200 ft. away. I saw the female on the nest and the male on the perching pole tearing at a fish. I was informed that one young was being fed on June 28, while the male again sat on the perching pole. Many Red-winged Blackbirds were reported pestering the female Osprey on July 1; a member of the Manitoba Hydro crew indicated that this had been observed ever since the female had begun to sit on the nest. The male Osprey apparently went to the nest four times with a fish, but was pestered so much by the blackbirds that he had to leave for the perching pole. I was told that two young could be seen flapping their wings and that they were now feeding themselves with fish brought to the nest by the parents. On August 25 it was noted that the two young had left the nest.

Available breeding records of the Osprey in Saskatchewan, 1914-1976, were listed in the *Blue Jay*.⁶ The effect

of man-made platforms on Osprey reproduction in one area of Saskatchewan has also been described.⁵ A special bulletin detailing construction of Osprey nest platforms has been published.³ The author of that report, P.J. Ewins, notes:

"Ospreys...have been increasing rapidly in many parts of North America since the mid-1970s, when organochlorine pesticides were withdrawn from widespread use. In the Great Lakes region and elsewhere these increases have been facilitated greatly by people installing artificial nest structures, particularly in areas where preferred natural nest sites are now scarce...."³ It is gratifying to know that due to man's caring intervention this magnificent bird is making such a successful comeback.

Acknowledgements

I wish to thank the crew of Manitoba Hydro and staff of Natural Resources at Grand Beach, especially Rod Cotton, for their efforts and their information. Gerald Jones, who has been observing the Grand Marais Ospreys closely for many years, and Letty and Ernie Taylor of Grand Marais, deserve thanks for providing information and photos. My deep appreciation is expressed to Robert Nero for his critical review of this paper. Gordon G. Graham kindly assisted with typing and entered the MS on a word processor.

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Rock Doves were domesticated in the Mediterranean area around 5-10,000 years ago.

A good homing Rock Dove can fly 800-1000 km per day.

DEATH OF AN OSPREY

DENNIS FISHER, 72 Richmond Crescent, Saskatoon, SK S7K 1A8

An October drive along our rivers is always a pleasant trip. The fall colours of yellow and red mix with the lasting greens to present a beautiful sight. A trip like this can also yield some exciting and rare sights. That was the case, when my wife Jeannie and I took "birder" Lynne Salisbury on a trip to the heart of the Northwest...Batoche. It was October 1st, we had just finished lunch at the National Historic Site, and were talking about the Mountain Bluebirds that were flitting about the area. We wondered if they were telling us something about "Indian Summer". Minutes later we were on the road and heading for the St. Laurent ferry. A mile south of the ferry we noticed a large raptor, circling close to the roadway. We slowed down as it circled near us. What was it? "It has got so much white on it" Lynne said. As it went by I noticed a mask on its eyes, and the wing dihedral. "I don't think it's a Buteo" someone said. Just then, things changed. The bird put its wings close to its body and started a power dive. It plunged and disappeared from sight.

I pulled the van to the side of the gravelled road. "Come on! It has got something, let's take a look!" I said as I parked the van. I thought we would cross the ditch to see a grassy patch below the hill crest, with our bird sitting with its prey. Maybe it would take to the air with a tiny mouse in its talons. We were in for a surprise. When we reached the crest we found out we were on the uppermost edge of a cliff. The river was about 70 feet below us. No grass, no bird and no mouse! In a few seconds we found our bird. It was in the water, about 2 feet from shore, in shallow water. The huge wing attracted attention as it

flapped in the murky water. There were still lots of bubbles on the surface and from our high vantage point, we could see the unsettled silt drifting away from the kill site.

Now, we could really see the bird and its markings. "It is an Osprey" cried Lynne. We were excited. As it toiled with its stubborn prey, still in the water, we could see the white specks on its back and wings. It was an immature Osprey! The Osprey was trying to get its catch ashore and was having trouble. We thought soon we would see the silvery form of a Sauger, Goldeye or Sucker, but we were wrong. When it got on the stony shore it had a brownish-grey form in its right talons! It was a medium-sized Muskrat. Lynne had a good pair of glasses with her so we took turns getting a closer look at this uncommon sight. You could see the Muskrat's tail. You



Leg of Osprey killed by Muskrat

Mary Houston

could also see a sense of confusion. It appeared as though this young Osprey did not know what to do with its "catch of the day"...and there was neither mom nor dad nearby, to ask. He looked confused as he struggled. With the glasses, I noticed fresh, bright red blood streaming from the Osprey's left shank. Was this Muskrat or Osprey blood? It was now about 3:15 pm and the contest was evenly matched. I wandered away, while Lynne and Jeannie kept careful watch. They told me the Osprey only pecked the Muskrat on one occasion. After about twenty minutes the Osprey had pulled the struggling Muskrat to a small, flat-surfaced rock. Atop this rock, it assumed what I call a "cluck hen" position: its wings out slightly, like a mother hen on her brood. The Muskrat was beneath the Osprey, still in its right talons, and time went on.

I suggested the Osprey was just being patient and planned on waiting until life had ebbed from the Muskrat. When he felt the final stillness, he would begin his meal of the day. We decided to move on. We had seen something special. "Wait till Stuart and Mary Houston hear about this!" I said, remembering these special people, "Yes, and Stuart will give you heck for not staying until the conclusion" remarked Lynne. We continued on and by the time we reached home that evening we had speculated on all the possible outcomes. So we thought, but there would be outcomes we could not even imagine. That's the rest of the story.

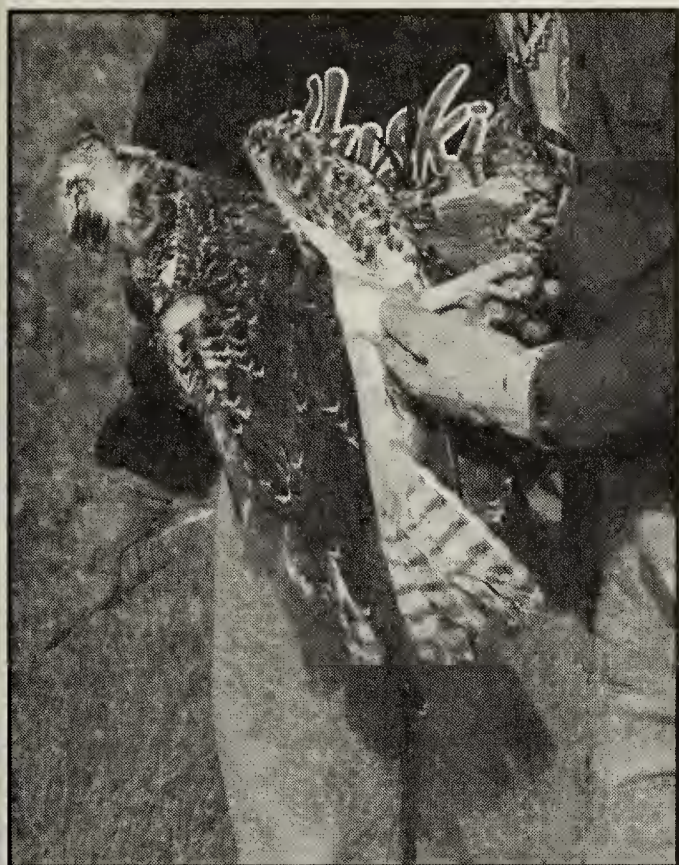
The next morning, about 8:30 am, I told myself I should phone our area's favourite birdman, and I called Dr. Stuart Houston. At this point I feel like writing about three pages on the Houstons, these very special people, but then I realize that anyone who reads to the second page of this article, knows the Houstons. After the pleasant words of

greeting, I said: "Stuart,...Jeannie, Lynne Salisbury and I saw an Osprey take a Muskrat from the river, yesterday!. Nearly interrupting, Stuart proclaimed "Could be a world first! "...Mary, please get on the extension, Dennis Fisher's on the line with an Osprey story!" he added.

I went on with the story, recalling the sequence of events and the times, locale and who all saw what. I was excited again. We talked ospreys, their habits and traits. Stuart was sure this could be a world first. To non-birders in the crowd this may be like seeing a Whooping Crane lay an egg!....and we saw it with our very own eyes! We talked on. We talked about the blood on the Osprey's leg and Stuart told me an Osprey's blood has poor coagulation factors, and that if the Muskrat bit the Osprey, we might find a dead Osprey.

Now, the scientist in Stuart was coming out. Stuart wanted the fool-proof evidence he could take to his peers. The Houstons are good friends with Alan Poole, a world authority on Ospreys. I wanted to believe this might be a first world sighting. We talked about the remains of the Muskrat and I offered to take Stuart to the location, 60 miles north of Saskatoon. He couldn't go because of his busy life, but could we go and bring back the evidence? I told him we would leave at 9:30 am and do what we could. I would bring a camera and photograph the site, blood, etc. Then I called Lynne Salisbury and told her we were not finished....she excitedly agreed to come with us.

A fresh batch of sandwiches, a few thermos bottles, and we were on our way. As we drove, we exchanged information we garnered from bird books overnight. Yes, Ospreys were known to sometimes take "small mammals". Would that include Muskrats? We got



Young Osprey killed by Muskrat
Dennis Fisher

to the site about 11:15 am on a bright October 2nd, 1997. I had a variety of camera lenses with me and we would record the site on film. First we went to the cliff edge where we made our observations and photographed the water's edge below. I took some wide-angle and telephoto (200 mm) shots of the kill site. Then the three of us made our way, down the steep, sandy slope. We held on to shrubbery in the tough spots, but soon we were water side. Plainly and simply there were no Muskrat remains at the site. There was no blood on the flat rock, where we last saw the Osprey. We saw some feathers and that excited us, until we realized

there were feathers in the water all along the river shore. We had lost our excitement "of the chase" and we were now "down". We had no evidence for Stuart Houston. Could we go back to Saskatoon?

We did not know how to think like a juvenile Osprey, but we decided to check the river's shoreline, hoping he had chosen another picnic site. We went south, about 500 yards and found nothing of interest. No signs. Nothing. Well, let's go north. We walked about 150 feet North and there in the green grass of the shore we saw the dead body in the grass. It was not the Muskrat. Stuart was correct, we found a dead Osprey. It was a shallow victory, a sad win. So much for science, but we did not feel good. The young Osprey was not the winner. The Muskrat as probably dead or dying in some bank tunnel. We looked, but found no trace of it. We took a few *in-situ* photos before we moved the body. At this point we did not know that the Muskrat was visible in the background. We took the Osprey, phoned Mary from Batoche and followed her directions. We delivered it to the Houston home. Mary met us at the door with a freshly banded Junco in her hand. We retold the story and photographed Mary with the Osprey. The wounds on the legs were plainly visible. Mary photographed the leg with the macro lens of my camera. We had brought back what evidence we could.



A central Wisconsin Passenger Pigeon colony
numbered 136 million pigeons.

FERRUGINOUS HAWK BANDING IN SASKATCHEWAN

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Ferruginous Hawks are of interest and concern, because they experienced a marked reduction in range in the first half of this century as grasslands were plowed,⁴ and showed a steady decline in productivity (measured as young per successful nest) between 1988 and 1996, and because many other grassland species, especially the Burrowing Owl and Sprague's Pipit, are showing population declines disproportionate to the more gradual loss of pasture area.

In the 1930s the late W. Ray Salt was the leading bander of Ferruginous Hawks in North America. Between 1930 and 1937 he banded 104 nestlings near Rosebud, Alberta (82% of those banded in all North America through 1938). From these hawks there were 22 recoveries, which mapped nicely their migration pathway.⁵ Sixty-eight percent were reported shot, reflecting the common sentiment of the time that "the only good hawk is a dead hawk," and helping to explain the remarkably high (21%) recovery rate.

In contrast, nothing has been reported about the movements of this species from Saskatchewan. We herewith report on the results of banding 3601 nestling Ferruginous Hawks (of which 2651 have been banded by CSH with 50 recoveries, 488 by WCH with 27 recoveries, and 295 by AS with 10 recoveries). Another 109 were banded by members of the Saskatchewan

Falconry Association as subpermittees of Richard W. Fyfe of Edmonton (3 recoveries), and 22 by Douglas W.A. Whitfield (1 recovery). There were no recoveries from 21 banded by Glen A. Fox, 10 by Josef K. Schmutz, 3 by M. Ross Lein and 2 by Fred G. Bard. Years with greatest number of hawks banded were 1987 (409), 1990 (416), 1994 (201), and 1997 (232).

More than any other raptor, Ferruginous Hawks tend to return to the same nest site, year after year. This simplifies the task of finding nests in subsequent years, the extreme example being a solitary Manitoba maple on the Kindersley-Elna PFRA Pasture near Kindersley. In this tree, Ferruginous young were raised successfully for 28 consecutive years (possibly a world record for any raptor?) before the adult hawk was predated on the nest, perhaps by a Golden Eagle.³ The nest has been successful for four consecutive years since.

Now that this beneficial hawk is rarely shot, the recovery rate has dropped to 3% or slightly less, and below 2% since 1990. Of the 94 recoveries received through the end of 1994, 15 were killed on highways, 9 were shot, 7 electrocuted, 3 injured, and 1 each caught in a fence, trampled by a cow, and retrapped by the bander on its wintering grounds. Five were simply marked 'band obtained,' two were on a skeleton, and 46 were found dead

from no definite cause.

Although the longevity record for North America is of a 20-year-old Strongfield, Saskatchewan hawk with an inscribed leather neck collar and bell rather than a band,² the 90 records suitable for assessment of longevity

have shown disappointingly low long-term survival. In fact, 58 (64%) of banded hawks died in their first 12 months, 9 between 13 and 23 months, then 8, 5, 4, 1, 2, 1, and 2 (the two oldest hawks living to 8 years).

The migratory path of Saskatchewan

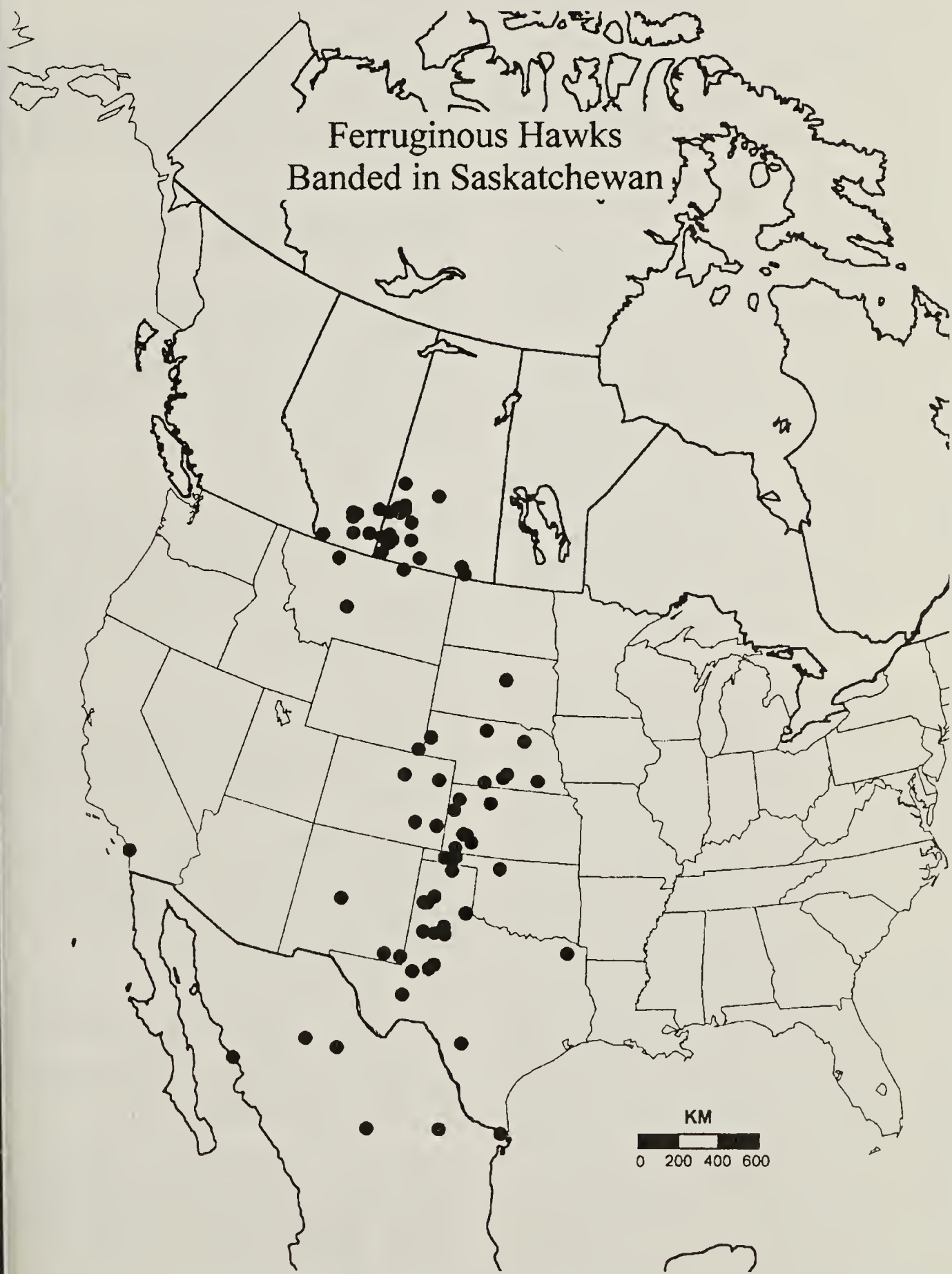


Figure 1. Ferruginous Hawks Banded in Saskatchewan

Ferruginous Hawks is almost directly south, passing mainly through Nebraska, Kansas, southeast Colorado, the panhandle of Oklahoma and western Texas, keeping east of the Rocky Mountains (Fig. 1). Those travelling the greatest distance were the seven recovered in Mexico; only six of these could be mapped, since the seventh recovery location was simply "Mexico," with no locality specified. These six went 2300, 2330, 2690, 2960, 2970, and 3030 km distant from hatching sites, the last being a hawk banded at Smiley, Saskatchewan and recovered the following May at Matamoros, Coahuila.

As with Salt's early Alberta recoveries, there was a single recovery in California, ours near San Clemente. Another, from the extreme western boundary of Saskatchewan south of Alsask, also crossed to Huatabampo, Sonora, on the Gulf of Mexico. Otherwise the Alberta and Saskatchewan hawks follow similar paths, with very little overlap with those breeding on the west side of the Rocky Mountains, which tend to keep farther west as they migrate south.¹

Not shown on the map are fourteen recoveries in Saskatchewan that had been banded elsewhere. Seven, banded as nestlings in Alberta, were recovered in extreme western Saskatchewan, including one recovered in the nesting season when more than six years old. Five nestlings banded in North Dakota were found dead in Saskatchewan within 160 km of the 49th parallel; the two recovered in May and June were 260 and 580 km from their natal site, in their 5th and 3rd summers, respectively, representing unusually great dispersal for this species; those in late July, September and October were 320, 485 and 425 km, respectively. An unusual report is that of a nestling female banded near Salmon Falls Creek in extreme southern Idaho near the

Nevada boundary, which was found dead on 16 December east of Saskatoon Saskatchewan, when ten years old. An adult banded in January on its wintering grounds in Kansas by R.M. Imler, was no doubt back on its breeding territory when shot near Bengough, Saskatchewan, the next June.

As an added note, Ferruginous Hawk numbers now appear to be steady. Productivity rebounded to as-good-as-ever levels, perhaps fuelled by unusually high vole numbers, in 1997.

Acknowledgements

We thank Andy Didiuk and Kathy Meeres, Canadian Wildlife Service, Saskatoon, for help in preparing the map, using CSH's new Atlas GIS mapping program.

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THE COMMON BUTTERWORT AND ITS RARE OCCURRENCE IN SOUTHERN SASKATCHEWAN

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The common butterwort (*Pinguicula vulgaris* L.) is a circumboreal northern hemisphere species belonging to the family Lentibulariaceae.¹⁴ It grows abundantly in the Arctic and boreal regions of Canada.^{7,12} Although it is commonly present in the north and eastern parts of Saskatchewan, it is absent from the prairies of Saskatchewan and Alberta.^{7,8,12} However, it occurs in a small area (north latitude 50°22' and longitude 103°39') of Strawberry Lakes, about 70 km from Regina or 35 km south of Indian Head.^{4,5,9,10} There it grows close to surrounding aspen-poplar groves in areas where there is considerable water seepage and ground water discharge along the sand outwash of a dry lake bottom.⁵ In the exposed area, hummocks occur abundantly where many grasses, mosses and other herbaceous floral elements thrive. The hummocks form important sites in the region, facilitating the growth of this herbaceous butterwort.

Early in the growing season, when the temperature is often below 0° C, the over-wintered butterwort plants show signs of growth. These "winter resting buds" or "hybernacula", are composed of compacted scaly leaves. At their bases occur many brood-buds (plantlets, gemmae, vegetative buds)

(Figure 1A,B).^{9,13} As growth proceeds, the scaly leaves of such plants expand to form rosettes of spread-out leaves (Figures 1C, 2A). During the expansion of scales that develop into leaves, the small plantlets get detached, often floating on spring-melted water. Such small buds, after the water level has receded, become established on hummocks and grow into adult plants. The plants developed from original bud-like plants and also from brood-buds are scattered individually or in clusters on the hummocks (Figure 1C).

Flower buds, each supported by a stalk of scape, emerge from the centre of the rosette in late April and early May. Flowers are elevated by the elongation of their stalks (Figs. 1D, 2A). The number of flowers per plant may vary from 1 to 7, one or two being the most common. Flowering does not occur in one-year-old plants. Plant rosettes vary considerably in size and age. Usually, the smaller plants are younger, and about 2-3 years old, while the larger plants are usually more than 3 years old. Smaller plants usually produce a single flower, the larger ones two or more. Flowers are bisexual, each consisting of 5 greenish or purplish sepals, 5 pink or purple petals, two stamens and a centrally placed pistil. The petals are fused laterally (*gamopetalous*), and the

base of the flower has a characteristic tubular structure representing the modified parts of petals, called the spur (Fig. 1D, Fig. 2D). The spurs accumulate secretory fluids often attracting a variety of insects, such as thrips, flies, bees, wasps, etc. Despite many insect visits, the flowers are predominantly self-pollinated with a very low probable occurrence of cross-pollination by insects.^{10,12,13} On plants, which produce many stalked flowers, the flowers mature in a sequence from the first formed to the most recent. The first developed flower is the most successful one in having early pollination and maturity, and also in producing a large number of viable seeds.

Flower abnormalities in the Strawberry Lakes population of the common butterwort are quite common. The first formed flowers usually contain normally developed floral parts (Figs. 1D, 2A). Some later-formed flowers, on the other hand, show many abnormal features (Fig. 2D-J). In addition, the flowers show the phenomenon of fasciation, which includes fusion of flowers and/or floral stalks (Fig. 2I,J). Occasionally, a flower may develop double spurs (Fig. 2F) or contain three stamens (Fig. 2H). In a few cases, the flowers may not develop spurs, the presence of which is a characteristic feature of the genus *Pinguicula*.

The common butterwort is known to exhibit the insectivorous habit by trapping and digesting insects, and the leaves are well adapted for it.^{1,3,13} On the upper surface of mature leaves occur a large number of glands which are classified as "stalked" and "sessile". Both types are capable of secreting fluids. Each gland has a multicellular head, and is supported by two-celled base (Figs. 1E, 2B,C). The two supporting cells in one type elongate to form an obvious stalk to support the

gland. In others the head is not elevated because of lack of elongation of the two stalk cells, and they are designated as stalk-less or sessile glands (Fig. 2B,C). In addition to being different in form, stalked and sessile, the glands also are reported to differ in function.³ The stalked glands secrete sticky substances which aid in the capture of the intruding insects (Fig. 1G).³ The sessile glands, on the other hand, secrete substances that contain digestive enzymes. Such enzymes digest the captured insects and release nutrients, especially nitrogenous, which are eventually absorbed by leaves of the plant.^{3,13}

Although the common butterwort occurs abundantly in the boreal and parkland areas of Saskatchewan, there are two important factors that make it an important species in the prairie region. Firstly, the species is confined to a small Strawberry Lakes area of the glaciated prairies of southern Saskatchewan where it has been isolated in its "refugium" since the melting of the glacier about twelve thousand years ago in this location.^{2,11} Isolated populations tend to diverge genetically with time making this a rare and unique opportunity for insights into the process of evolutionary change. Secondly, it is but one member of a community of other northern species which were also left behind during the northward postglacial vegetation advance. These include mosses (*Drepanocladus uncinatus*, *Mnium addine*, *Tomenthypnum nitens*), primitive vascular plants such as dwarf scouring-rush (*Equisetum scirpoides*), spike moss (*Selaginella rupestris*) and some low growing herbs such as Adder's mouth (*Malaxis monophylla*), hooded lady's-tresses (*Spiranthes romanzofiana*), oblong-leaved gentian (*Gentiana affinis*) and others. The habitat and the community of plants it

harbours appear to be a unique “one-of-a-kind” rare situation, which deserves

recognition and protection as a glimpse into the natural history of our past.

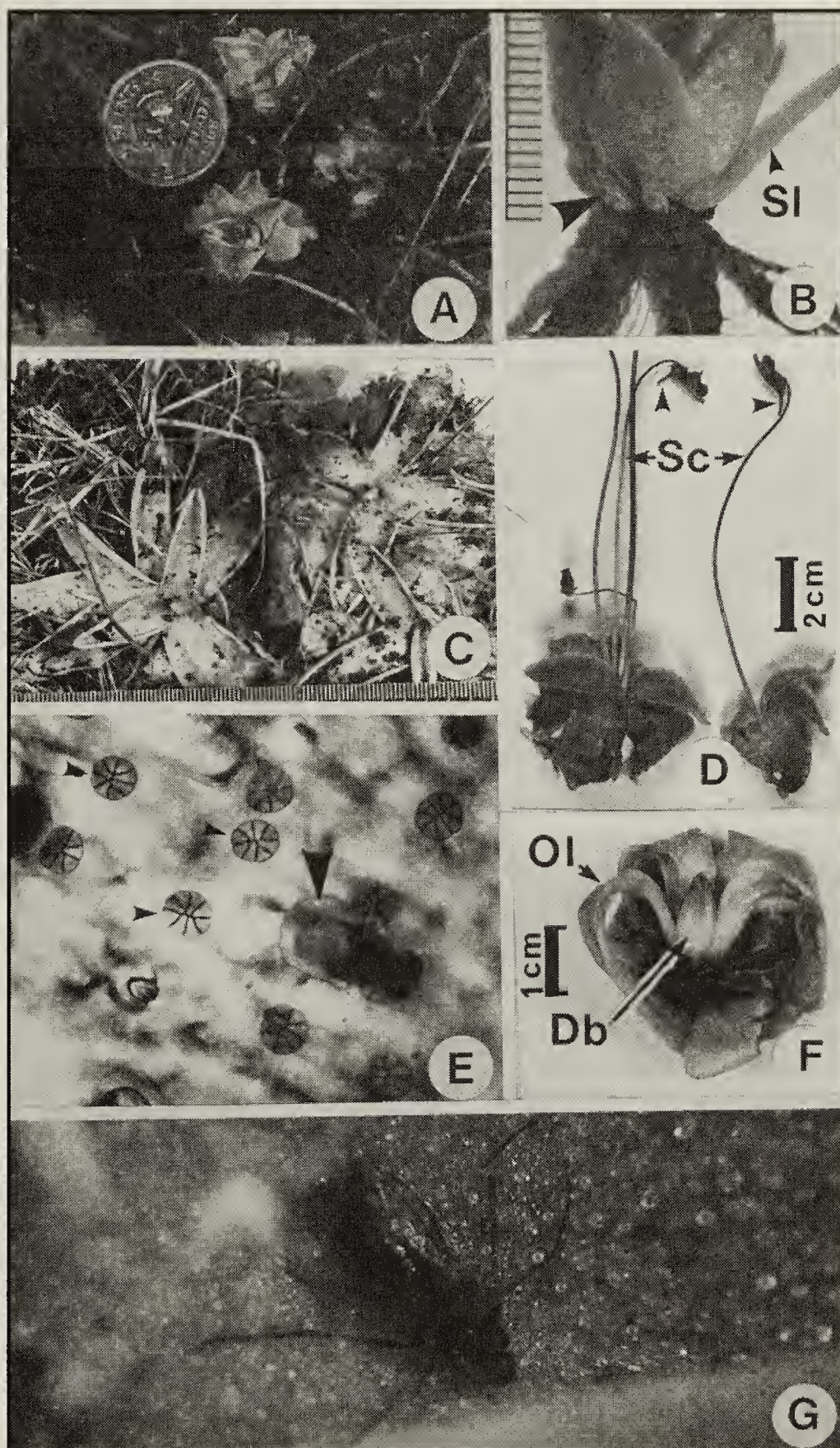


Figure 1. Growth and morphology of *Pinguicula vulgaris* L. (common butterwort) collected from Strawberry Lakes. **A.** Plants growing early in April on grassy hummocks containing mosses and grasses. **B.** A plant isolated from the hummock to show scaly leaves (Sl) and dead roots from previous year. Arrow points at vegetative (asexual) bud at the base of the plant. (Scale in mm). **C.** Plants growing in clumps in July to show the spread-out or rosette of leaves developed from scaly leaves. (Scale in mm). **D.** Plants with expanded leaves showing flowering scapes (Sc). Arrows point at spurs of flowers. **E.** Upper leaf surface with sessile (small arrow heads) and stalked (large arrow head) glands. x 250. **F.** A plant in late July with outer normal leaves (Ol) and centrally situated over-wintering brood or dormant bud (Db) with scaly leaves. **G.** Leaf surface with a trapped insect. x 70.

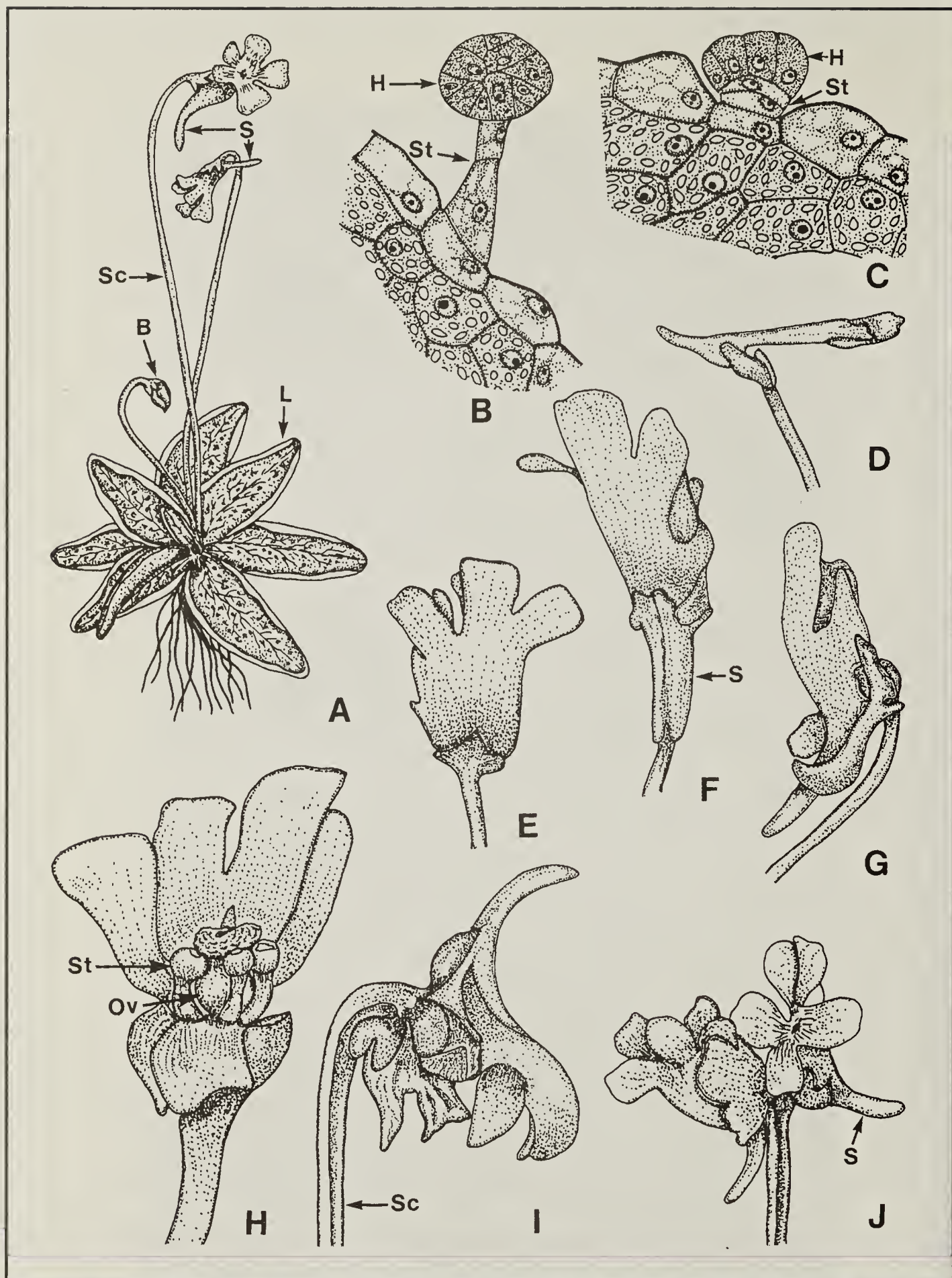


Figure 2. Drawings of different parts of *Pinguicula vulgaris* L. plant. **A.** A plant collected in mid-May with a rosette of leaves (L) and centrally placed three floral scapes, two with flowers showing spurs (S) and one flower bud (B). x 1/2. **B.** A mucilage secreting gland with a multi-cellular head (H) and a two-celled stalk (St). x 50. **C.** A sessile enzyme secreting gland with a multi-cellular head (H) and a short two-celled stalk (St). x 50. **D.** An abnormal flower with no normally differentiated floral parts. x 2. **E.** A flower lacking spur. x 2. **F.** A flower with two spurs (S) fused together. x 3. **G.** A flower with malformed petals and other floral parts. x 2. **H.** A flower showing ovary (Ov) and three stamens (St). x 3. **I.** A double floral scape (Sc) fused together and two flowers fasciated abnormally with a single spur. x 2. **J.** Two floral stalks fasciated with two distinct flowers each with its own spur (S). x 2.

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Lavender is from 'lavo', Latin for 'to wash, because it was used by the Romans to perfume their bath water.

Primrose, is from primus , Latin for first - perhaps meaning the first "rose" as the blooms appear before roses flower.

INSECTS

NEW LARGE INSECT GALL ON CANADA THISTLE IN SASKATCHEWAN

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From 1974 to 1980, while an employee at the Regina Research Station, Agriculture and Agri-Food Canada, I released the European Canada thistle stem-gall fly (*Urophora cardui*) on Canada thistle (*Cirsium arvense*) in six provinces.¹ It was hoped that the galls produced by the larvae of this fly would reduce this noxious weed's vigour and aid in its control. The fly became established initially only east of Manitoba but not in western Canada. From studies in Europe and results of our releases, we learned that the fly thrives best in habitats close to water and trees. Also it was found that in New Brunswick the larvae had become more winter hardy in only eight seasons than the original release stock which was collected in the Rhine Valley of Germany and France. Furthermore, larvae from galls collected near Helsinki, Finland, were found to be even more winter hardy than the New Brunswick population.

Armed with this knowledge, a new attempt was made to establish the fly in Saskatchewan. A favourable habitat was found in Echo Valley Provincial Park. In 1984, over 3042 flies were released from galls collected in New Brunswick, and in 1986, 287 flies from galls collected in Finland. The release site, an abandoned lagoon, is located in the portion of the park west of Highway 210. The lagoon is located about 60 m south of the lake shore and can be reached by following a hiking trail

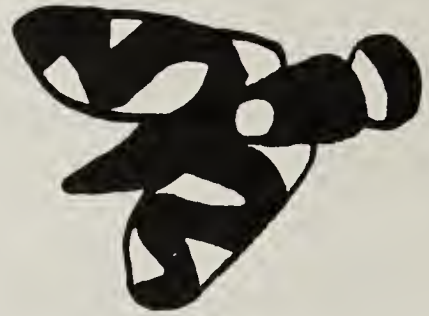


Figure 1. Female Canada thistle stem-gall fly on a Canada thistle leaf. (Traced from a photograph.)

Diether Peschken

for about 600 m leading west from the northwestern-most picnic and parking grounds.

Description of the Fly and Life History.

The Canada thistle stem-gall fly belongs in the family of fruit flies (*Tephritidae*). It is slightly larger than our common house fly (*Musca domestica*). Each wing is adorned with a prominent black "W" pattern (Fig. 1). In Saskatchewan, most adult flies emerge from their galls in June and July. The males emerge first and establish a territory on a Canada thistle shoot. Often, they fight off any other male intruder by waving their wings, showing off the prominent "W" pattern and physically shoving rivals off the leaf with their heads. They also smear a strong smelling pheromone (a communication chemical) onto the leaves, the purpose of which is not entirely understood. Any female landing in the male's territory is welcomed and often courted with much



Figure 2. Large gall caused by the Canada thistle stem-gall fly.

waving of the wings, and soon copulation occurs. The females lay batches of eggs among the tiny, terminal leaves of the main or side shoots. The emerging larvae tunnel into the stem where they induce formation of a gall containing nutritive tissue, the food of the larvae (Fig. 2). The gall is multi-chambered with each larva developing in its own chamber (Fig. 3). The tunnels fill with callus and serve as exit routes for the adult flies in spring. Galls may be small and globular, 1 cm in diameter, containing only one larva, or elongated and large, up to 6 cm, containing up to 28 larvae with an average of 6. We found a maximum of nine galls per thistle shoot. Larvae are pale white, and exhibit a dark, anal plate when mature (Fig. 3). Galls are green during their growth phase in June and July and become lignified, hard and brown in colour in August. The mature larvae overwinter inside their galls. During the winter and spring the galls partially deteriorate. When warm temperatures return, penetrating air allows the larvae to pupate. Soon the flies emerge from their pupae and squeeze their way out

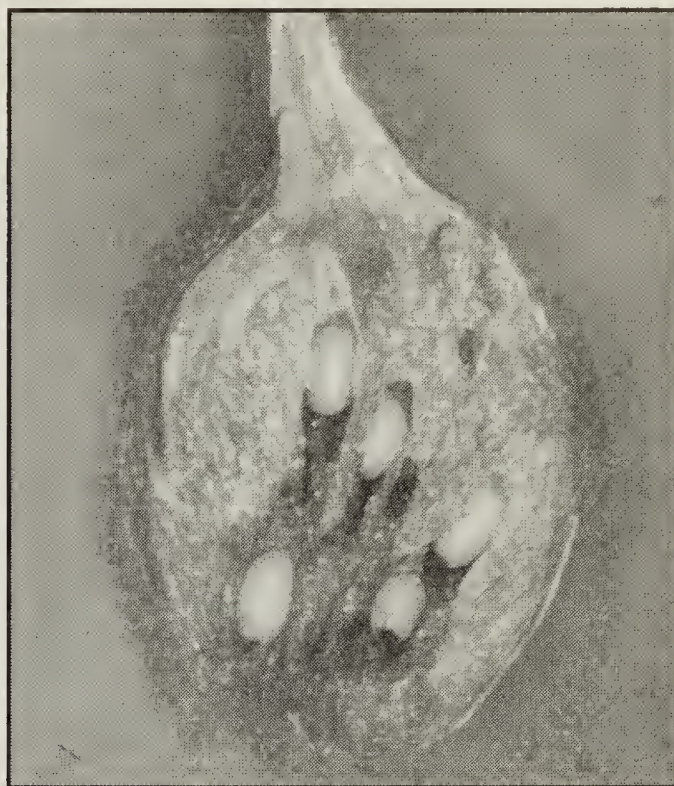


Figure 3. Gall cut open to show five mature larvae in their individual chambers.

through the exit tunnels using a ptilinum (a tough protrusile sac on their forehead) to push the callus aside which has become soft and spongy by spring. With a sharp knife, larvae can be dissected out of the galls in fall. Exposed to air, mature larvae will immediately pupate and flies will emerge in about four weeks. Thus, it is a wise arrangement that the gall is airtight in fall which prevents untimely development and emergence. Canada thistle is the only North American host plant for this gall fly.

Population Development and Habitat.

The population of the gall fly was followed from 1984 to 1994 in the same three areas, the abandoned lagoon, a sunny location, the narrow, shady trail between the lagoon and the western most parking and picnic grounds of the Park, and along the shore from the picnic ground going west about 500 m, which is a cool, moist habitat. During the hot and dry eighties, most galls were found near the shore, 82% in 1989 and 63% in 1990. The total number of galls

reached a peak of 1661 in 1990. Up to 9 galls per thistle stem (average 5.6 galls) or 6.2 galls per sq m were found in 1989 in the most favorable habitat, i.e. near the lake shore. The summers of 1992, 1993 and 1994 were characterized by below normal temperatures, and above normal rainfall occurred in 1991, 1993 and 1994 and the gall count crashed to 96 in 1993 and 76 in 1994. Furthermore, the surviving population was found mostly on the relatively warm but in those years sufficiently moist release site, the abandoned lagoon, where 90 (87%) of the galls were found in 1993, and 73 (96%) in 1994.

It appears that warm temperatures are important for the adult flies, and moisture for the larvae. The flies are inactive below 20°C and their activity peaks at 30-34°C. From 1992 to 1994, 30°C was reached on an average of only 1.7 days in June, and 1.3 days in July, while from 1984 to 1990, 30° was reached on an average of 5 days in June and 6.3 days in July (Environment Canada Weather Station at Regina, Saskatchewan). On the other hand, habitat of the larvae influences winter survival. We compared the rate of spring emergence of adult flies from larvae collected on the release site, which is relatively dry, with that of larvae collected along the shore, where it is relatively moist. Based on data collected during three years in the dry,

warm eighties, in April only 28% of the larvae from galls collected on the dry site emerged into healthy adult flies, compared with 81% of the larvae from galls collected along the shore. Thus, larvae which developed and overwintered in a favourably moist habitat survived the winter far better than those from a dry habitat.

Galls can also be found near the active, new lagoons close to the south border of the Park. By 1993, galls had spread 4 km east along the lake shore and 2.5 km south from the release site.

The Canada thistle stem-gall fly does not contribute to the control of Canada thistle, but it is an interesting addition to our insect fauna.

Acknowledgement

I want to thank Jo-Anne Derby and Karen Sawchyn for their help in field surveys and laboratory rearings.

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Ice insects of the order Grylloblattodea are killed by the heat
of a human hand.

Snow mosquito young may hatch under the snow.



Sharp-tailed Grouse

George Tosh



Common Snipe, Waterton Lakes National Park

Teresa Dolman



Plains Buffalo, P.A.N.P.

Ron Jensen



HERPETOFAUNA AND FISH

FISH SURVEY OF THE SASKATCHEWAN PORTION OF THE MISSOURI RIVER BASIN

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Introduction

The purpose of this survey was to document the occurrence of rare and threatened fish species in the Saskatchewan portion of the upper Missouri River drainage. While much focus has been placed on species of commercial and economic importance, this survey sought information on the distribution of game and non-game fish. Many groups, such as cyprinids ("minnows"), play an important role in the food web of an aquatic ecosystem. As many cyprinids are associated with unique microhabitats, and segregate accordingly¹⁰, they serve as good indicator species for the overall health of a river, and reflect the ecosystem's ability to sustain a level of biological diversity. Other species such as the mountain sucker (*Catostomus platyrhynchus*) are also associated with specific habitats, and their population trends closely reflect habitat perturbations.⁵

Methods and Materials

Fish were sampled throughout southwestern Saskatchewan from June 19 - 30, 1993 in permanent creeks and rivers of the upper Missouri River drainage. Water from these sources eventually flows into the Gulf of Mexico

(Fig 1). Individual site selection was based mainly on accessibility. Latitude and longitude of each site was recorded using a Trimble Flightmate Global Positioning System (Model 20285-00 Rev B, Trimble Navigation Ltd.) device which is accurate to ± 100 metres on a two dimensional plane. At 11 sites, deeper and more homogeneous stretches of water were sampled by hauling a seven-metre small-mesh (3 mm bar) seine (Table 1). Wherever possible, the haul covered the entire stream width for a distance of least 20 metres. At this point, the wings of the seine were dragged up on shore, leaving the bag containing the fish in the water. Fish were then transferred to a bucket containing adequate water for respiration. For shallow, fast stretches, a Coffelt gas-powered electro-fisher was operated between 100 and 300 volts, depending on stream conductivity. Fish were dip-netted as encountered and revived in a 10 litre plastic pail with adequate water for respiration. Once the sampling procedure was completed, all fish were identified to species. Wherever possible, fish were released in the same micro-habitat from which they were removed. Any specimen which could not be confidently identified on site was anaesthetized in 2-phenoxyethanol prior

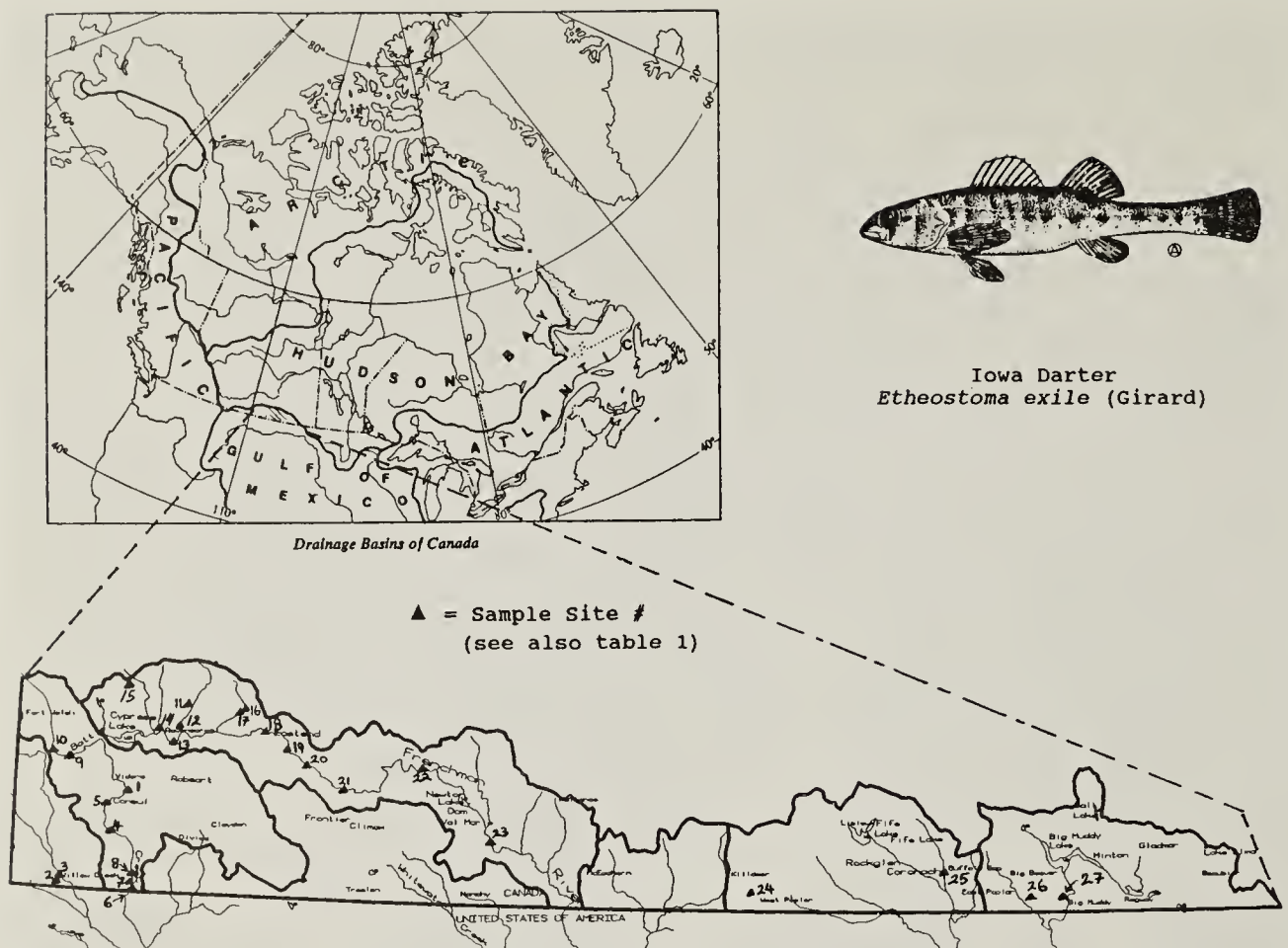


Figure 1. Fish Survey of the Saskatchewan portion of the Missouri River Basin.

to fixation in 10% formaldehyde. Subsequent identification was accomplished in the laboratory using appropriate characteristics. At each site, water temperature was recorded using a Hach digital thermometer, while stream width and depth was measured with a metre stick. Substrate type also was noted, with all information recorded in a field book.

Results and Discussion

Twenty-seven sites were sampled (Table 1, Fig 1): Three of these were sampled twice for a total of 30 samples. Twenty of the 26 expected species in the drainage were collected (Table 2). Of the 26 expected species, five are exotic or introduced species. Seventeen of the 21 native or endemic species were collected.

The collections made in Caton and Morgan creeks represent the first published surveys conducted on these waters (Ron Jensen, pers. comm.) New localities were also recorded for the

Finescale Dace (*Phoxinus neogaeus*) and Mountain Sucker. A total of five specimens were sacrificed. Two mountain suckers and one Lake Chub (*Couesius plumbeus*) were taken to add to museum collections, while two Brassy Minnows (*Hybognathus hankinsoni*) were taken for definitive identification, since species within the genus *Hybognathus* are similar and difficult to identify in the field.¹¹

The Fathead Minnow (*Pimephales promelas*), White Sucker (*Catostomus commersoni*), and Brook Stickleback (*Culaea inconstans*) were the most common species collected in slow, deeper water, while the Longnose Dace (*Rhinichthys cataractae*) was common in riffle-type habitat. The Northern Redbelly Dace (*Phoxinus eos*) was collected in good numbers from a range of habitats. All of the above species are considered common in Saskatchewan, and it comes as no surprise that they were found to be widespread (Table 2) and to occur in large numbers (Fig 2).

These five species represented almost 88 percent of the total number of fish sampled.

Of particular interest are the species considered rare in this drainage within Saskatchewan. Single individuals of the brassy minnow and the lake chub were collected at only four and three sites, respectively (Table 2). While the lake chub is more common in lakes and other large water bodies in other parts of its range¹², Wells stated that creeks and rivers are preferred in the Missouri basin.¹⁶ The relative absence of the brassy minnow is also noteworthy. Scott and Crossman state that while the brassy minnow occupies creeks in eastern Canada, it is more common in bog ponds with dark, stained water.¹² The single Battle Creek specimen was taken in an area of dense vegetation. This habitat is favourable to the species as it feeds mainly on plant material which it is able to break down in its long, coiled digestive tract.^{3,11}

One Burbot (*Lota lota*) was collected in the same area of the Frenchman River as those specimens taken by Bevan in 1978; the distribution of this species appears to be restricted to this portion of the watershed.¹ The single Stonecat (*Noturus flavus*), also collected in the Frenchman River at Eastend, represents a successfully invading species. First recorded in the Frenchman River in 1970, it expanded its range upstream in this river, and by 1982 it was present in Conglomerate Creek.¹ A similar invasion by the stonecat has occurred in Manitoba. Since its 1969 discovery in the Red River near Winnipeg¹³, it has been reported in the Assiniboine River westward to the town of Shellmouth, as well as in the Souris and Little Saskatchewan rivers.¹⁴ While absent from the Qu'Appelle River in Saskatchewan, its appearance in the Assiniboine River upstream from the mouth of the Qu'Appelle would suggest occupation of the latter in the future.

In general, sampling efficiency and

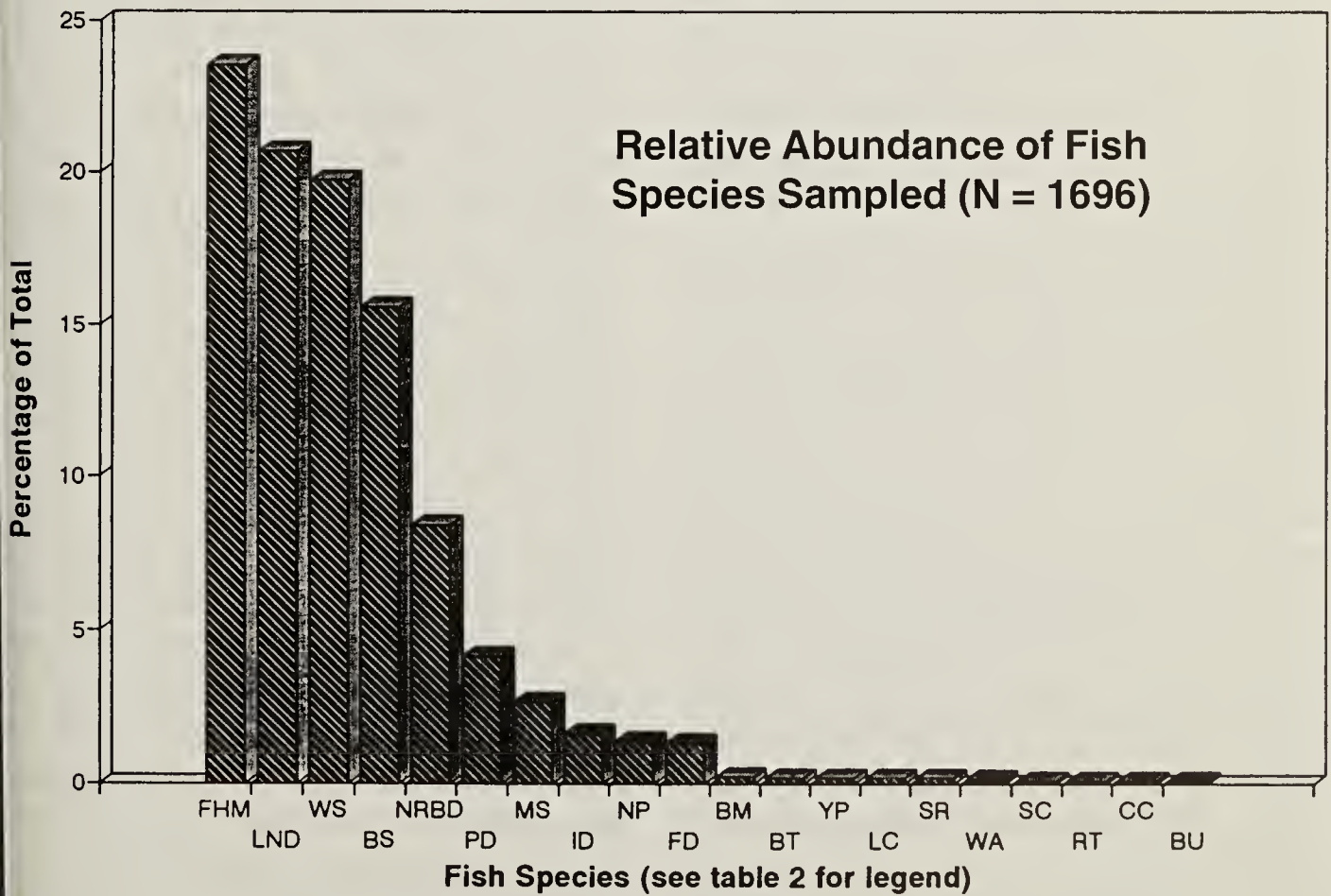


Figure 2. Relative Abundance of Fish. Species Samples (N = 1696)

season affect the numbers of all species. The rarity of both the Stonecat and Burbot in our collections may be due to sampling procedure. Both species are nocturnal⁹ and seek shelter during the day under the cover of rocks and logs. While electrofishing effectively immobilizes these fish, both species (especially stonecats) may become wedged under rocks. Due to time constraints, only a few chosen rocks were lifted to check for wedged individuals. Nocturnal sampling may increase the yield of these two species in Missouri headwaters, thereby increasing our knowledge of their contribution to stream integrity in Saskatchewan.

Another species of interest is the Mountain Sucker, one of eight small catostomids restricted to western North America.⁴ The Saskatchewan distribution of the mountain sucker includes the South Saskatchewan River and the Milk River drainage (Battle Creek and Frenchman River tributaries), but is restricted to regions of increased elevation.⁴ In streams, mountain suckers inhabit areas of moderate current with rocky substrate.⁸ In a 100 metre stretch of Caton Creek, mountain suckers and Longnose Dace were collected exclusively in the shallow, rocky riffle areas, while White Suckers, Pearl Dace (*Margariscus margarita*), Northern Redbelly Dace, and Fathead Minnows were dominant in the pools which alternated with the riffles. The two Mountain Suckers taken in a seine haul of the deep pool upstream of the electrofished stretch of the creek probably were occupying the area immediately below a culvert, where a noticeable current was present. The three Mountain Suckers from Conglomerate Creek were also taken from a narrow, rocky stretch with high water velocity.

Curiously, no Mountain Suckers were collected from Sucker Creek, even though suitable habitat is plentiful. This absence of suckers may be due to the naturally-reproducing population of Brook Trout (*Salvelinus fontinalis*) inhabiting the creek. With a maximum size of approaching only 175 mm (Standard Length)⁴, the suckers are vulnerable to trout predation for a good portion of their lives.¹² Glover found that stream rehabilitation in South Dakota, while effective in increasing Brown Trout (*Salmo trutta*) populations, was detrimental to Mountain Sucker populations, reducing them as much as 90 percent.⁶ Decker also found that Mountain Suckers become extremely rare where reservoir construction results in habitat loss due to reduced velocity and increased depth.⁵ Similar population declines have been observed for stonecats in areas altered to form reservoir-like conditions.¹⁵ Unfortunately, no data regarding species composition in Sucker Creek were available prior to initiation of trout stocking.

While some species which occur in the Saskatchewan portion of the drainage were not collected, their absence can be attributed to restricted distribution and habitat preference or sampling bias. For example, only one locality for the Flathead Chub (*Platygobio gracilis*) has been reported.¹ Its occurrence in the Frenchman River is in accordance with its preference for fluctuating streams with turbid and alkaline water.² Collections made by the senior author in Manitoba suggest that Flathead Chubs also prefer relatively fast-flowing sections of medium to large rivers, where they occupy mid-channel gravel habitat. The Assiniboine River, where it flows through the Manitoba escarpment, is one such location. It is of special note that in Montana, flathead chubs are collected in association with many species considered rare in

Saskatchewan, such as the Mountain Sucker, the Stonecat, and the Western Silvery Minnow (*Hybognathus argyritis*).⁷

As for the Western Silvery Minnow, its occurrence in Saskatchewan is, at best, extremely limited, if realized at all. This species has been reported from only three localities. Of these, specimens from two of the localities were re-identified as the Mississippi Silvery Minnow (*Hybognathus nuchalis*) and recorded as such by Atton and Merkowsky.¹ However, Page and Burr consider the *Hybognathus* species occurring in the upper Missouri River to be *H. argyritis*, while *H. nuchalis* is restricted to lowland areas of the Mississippi River north to Minnesota.¹¹ Both species prefer sluggish backwater areas. It is possible that positive identifications of the Saskatchewan specimens may be achieved only after examination of the basioccipital process.¹¹

Absence of the Goldeye (*Hiodon alosoides*) from our collections is due both to its limited distribution (found only in the East Poplar River) and exclusion of habitat preference from our sampling procedures. The Goldeye is associated with medium to large turbid lowland rivers and lakes¹² where it is commercially harvested. Its added preference for impoundments¹¹ may result in population increases, given the presence of several dams in the Poplar River system.

Thus, our data suggest that possible threats to rare non-game fish species include habitat alteration, either from natural (e.g., beaver dams) or man-made sources and species introductions. The collection from the Poplar River upstream of the dams yielded a low species diversity (Fathead Minnows and Brook Sticklebacks dominated the sample) and included the

only appearance of the Common Carp (*Cyprinus carpio*), a species regrettably introduced into North America from Europe. Impact assessments of future human-induced habitat alterations, including species introductions, should consider the consequences to native non-game fish populations.

Acknowledgements

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Table 1. Sample site parameters.

Date Sampled	Site #	Locality	Abbr.	Lat. (N)	Long. (W)	Temp (C)	Method*	Width (m)	Depth (m)
20 June 93	1	Battle Creek 1	BC1	49 18' 00"	109 27' 43"	24	ES	3 - 5	0.1 - 0.65
	2	Trib. of Lodge Cr.	T.LC	49 02' 09"	109 48' 20"	26	SENE	4.0	1.00
	3	Lodge Creek	LC	49 02' 30"	109 46' 54"		OB	3.5	0.30
	4	Battle Creek 2	BC2	49 10' 56"	109 32' 51"	26	ES	5.0	1.20
	5	Battle Creek 3	BC3	49 15' 45"	109 34' 06"	24.5	ES	5 - 6	0.1 - 0.65
21 June 93	6	Battle Creek 4	BC4	49 00' 02"	109 25' 04"	23	ES	5 - 8	0.3 - 1.0
	7	Battle Creek 5	BC5	49 00' 08"	109 25' 16"	23	ES	3 - 4	0.1 - 0.5
	8	Battle Creek 6	BC6	49 02' 25"	109 25' 22"	26	ES	3.5 - 4	0.1 - 0.5
	9	Battle Creek 7	BC7	49 24' 45"	109 44' 35"	26	SENE	4 - 10	0.1 - 1.0
	10	Battle Creek 8	BC8	49 25' 46"	109 50' 23"	22	SENE	3.5 - 4	0.2 - 1.0
22 June 93	11	Caton Creek	CC	49 34' 00"	109 12' 57"	21	SENE	2.5 - 5.5	0.3 - 1.2
	12	Fairwell Creek	FC	49 30' 12"	109 13' 11"	16.5	ES	1.5 - 2.5	0.1 - 0.5
	13	Frenchman River 1	FR1	49 27' 45"	109 15' 22"	17	SENE	12 - 15	3.00
	14	Davis Creek	DC	49 30' 21"	109 20' 02"	16	ES	2 - 4	0.2 - 0.8
	15	Lonepine Creek	LPC	49 37' 55"	109 28' 48"	20	ES	10.0	0.2 - 0.75
23 June 93	16	Conglomerate Creek 1	CoC1	49 33' 48"	109 55' 08"	9	ES	4.5 - 5.0	0.5 - 1.0
	17	Conglomerate Creek 2	CoC2	49 34' 01"	108 54' 26"	16	ES	1 - 4	0.2 - 1.0
	18	Frenchman River 2	FR2	49 30' 50"	108 46' 42"	21	SENE	4 - 6	0.4 - 1.0
	19	Frenchman River 3	FR3	49 27' 54"	108 41' 49"	19	ES	1.0	0.1 - 0.5
	20	Frenchman River 4	FR4	49 24' 40"	108 36' 10"	16	SENE	6 - 7	0.1 - 0.7
28 June 93	21	Frenchman River 5	FR5	49 19' 55"	108 25' 06"	16	SENE	6 - 7	0.1 - 0.7
	22	Frenchman River 6	FR6	49 24' 37"	108 01' 11"	16	SENE	6 - 7	0.2 - 0.8
	23	Frenchman River 7	FR7	49 11' 56"	107 41' 18"	14	SENE	4 - 5	0.2 - 1.0
	24	Morgan Creek	MC	49 04' 15"	108 31' 44"	13	SENE	4 - 5	0.1 - 1.0
	25	E. Poplar River	EPR	49 09' 43"	105 28' 42"	13	SENE	10.0	0.3 - 1.2
29 June 93	26	Trib. of Beaver Cr	TBC	49 05' 24"	105 08' 37"	13	SENE	3 - 5	0.4 - 0.8
	27	Palsley Brook	PB	49 02' 11"	104 52' 14"	15	SENE	2 - 8	0.1 - 0.85
	28					15	ES	0.5 - 4	0.3 - 1.0
	29					15	ES	6.0	0.3 - 1.0
	30					15	ES	6.0	0.3 - 1.0

* Method: ES = electrofishing, SENE = small mesh seine, OB = observed

Table 2. Presence of species in sample by site.

Locality	Fish Species*																	# species/site		
	NP	RT	BT	LC	CC	BM	PD	NRBD	FD	FHM	LND	WS	MS	SR	SC	BU	BS		ID	YP
Battle Creek 1							1	1	1	1	1	1					1			7
Trlb. of Lodge Cr.	1																			1
Lodge Creek	1																			1
Battle Creek 2						1	1			1							1			3
Battle Creek 3						1	1	1		1	1	1					1			7
Battle Creek 4										1	1	1					1			3
Battle Creek 5										1	1	1					1			4
Battle Creek 6				1						1	1	1					1		1	5
Battle Creek 7								1			1	1		1			1			4
Battle Creek 8		1						1		1	1	1	1	1			1			5
Caton Creek							1	1		1	1	1	1	1			1		1	9
Fairwell Creek			1				1	1		1	1	1					1		1	7
Frenchman River 1								1		1		1					1		1	5
Davis Creek																	1			1
Lonepine Creek										1							1			3
Conglomerate Creek 1							1	1		1	1	1					1		1	6
Conglomerate Creek 2								1	1	1	1	1		1						5
Frenchman River 2						1				1	1	1				1				6
Frenchman River 3										1	1	1	1						1	5
Frenchman River 4										1	1	1	1						1	3
Frenchman River 5				1						1	1	1	1				1			4
Frenchman River 6				1						1	1	1	1				1			4
Frenchman River 7										1	1	1	1				1		1	5
Morgan Creek						1	1	1		1	1	1					1			8
E. Poplar River					1					1							1		1	4
Trib. of Beaver Cr										1							1			2
Paisley Brook																	1		1	2
# sites in which a species was detected:	2	1	1	3	1	4	6	10	4	19	14	18	4	1	1	1	18	8	2	1

* Fish Species:

- NP = Northern Pike

RT = Rainbow Trout

BT = Brook Trout

LC = Lake Chub

CC = Common Carp
- BM = Brassy Minnow

PD = Pearl Dace

NRBD = Northern Redbelly Dace

FD = Finescale Dace

FHM = Fathead Minnow
- LND = Longnose Dace

WS = White Sucker

MS = Mountain Sucker

SR = Shorthead Redhorse

SC = Stonecat
- BU = Burbot

BS = Brook Stickleback

ID = Iowa Darter

YP = Yellow Perch

WA = Walleye

Table 3. Number of individuals in sample by species by site.

Locality	Fish Species																			#/site	CPUE	
	NP	RT	BT	LC	CC	BM	PD	NRBD	FD	FHM	LND	WS	MS	SR	SC	BU	BS	ID	YP			WA
Battle Creek 1							1	1	1	35	5	2					5				50	0.2146
Trib. of Lodge Cr.	3																				3	NA
Lodge Creek	20									6							4				20	NA
Battle Creek 2						1															11	0.0615
Battle Creek 3						1	3	5		13	13	3					10				48	0.2540
Battle Creek 4										1		9					4				14	0.0586
Battle Creek 5											2	2					2		11		17	0.1393
Battle Creek 6						1				23	2	2					2				28	0.1181
										65		10					2				77	NA
Battle Creek 7											9						2				26	NA
Battle Creek 8		1								14		4	3				2				18	NA
Caton Creek							11		7	11	34	37	36				25				181	0.5314
							24	65	7	2	3	13	2				2				119	NA
Falwell Creek			3				2	2			2	9					14	1			33	0.2025
Frenchman River 1								1		40		2	2				22	2			67	0.4467
Davis Creek																	8				8	0.0381
Lonepine Creek										1							31	2			34	0.0757
Conglomerate Creek 1							26	24	2	2		23					51				130	NA
Conglomerate Creek 2								13		8	187	4	3								215	1.7200
Frenchman River 2						1				7	10	63				1					83	0.2554
Frenchman River 3										2		13			3				1	2	18	NA
Frenchman River 4										1		107							2		108	NA
Frenchman River 5				1							60	9									70	0.1994
										3		3									6	NA
Frenchman River 6						1					41	4	7				1				53	NA
Frenchman River 7										105	9	1					24	3			119	0.8623
Morgan Creek										20	2	12					35	4			82	0.1802
E. Poplar River					1		1	1	17	5							20				48	0.1778
Trib. of Beaver Cr										8							2				25	0.0903
Paisley Brook										5							2	3			5	NA
Total number of individuals in all samples:	23	1	3	3	1	4	70	143	22	399	351	335	45	3	1	1	264	27	3	2	1696	
																					Total	

* Fish Species:

NP = Northern Pike
RT = Rainbow Trout
BT = Brook Trout
LC = Lake Chub
CC = Common Carp
BM = Brassy Minnow
PD = Pearl Dace
NRBD = Northern Redbelly Dace
FD = Finescale Dace
FHM = Fathead Minnow
LND = Longnose Dace
WS = White Sucker
MS = Mountain Sucker
SR = Shorthead Redhorse
SC = Stonecat
BU = Burbot
BS = Brook Stickleback
ID = Iowa Darter
YP = Yellow Perch
WA = Walleye

* CPUE = Catch per unit effort (fish/sec). Applicable to electrofishing only.

GAME FARM DEVELOPMENT IN SASKATCHEWAN: SHOULD WE BE CONCERNED?

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"If the goal is to maintain wild populations both now and in the future, the formulation of enabling legislation for game farming should proceed with far more caution than has been in evidence to date" (Twiss *et al.* 1996).

Game farming is an alternative agricultural practice that promises to be lucrative for farmers during difficult financial times (Saskatchewan Agriculture and Food Web page). Currently, most game farming revenue comes from sales of antler and breeding stock, although Saskatchewan Agriculture and Food (SAF) expects this industry to further develop foreign and domestic markets for meat and capture a portion of the beef industry (Anonymous 1998, SAF Web Page). Native game animals are more efficient at converting feed to meat, require less shelter, and do better on marginal land than do domestic livestock species. Unfortunately, this marginal land is often the only land available to wildlife in our highly fragmented agricultural landscape. Herein lies one of the many conflicts between game farming and wildlife conservation: If agriculturally unproductive lands are converted to game farm pasture as has been done worldwide (Scotland-Blaxter *et al.* 1974, Meuron 1975; Germany- Koch 1976; New Zealand-Yerex 1979; England-

Wagner 1984; Asia- Drew *et al.* 1989, Hungary- Somogyvari 1993, Ireland- Connolly 1995), where will wild animals go? The list of conservation concerns surrounding game farming is large and has biological, philosophical and political aspects. Biologically, game farming threatens wildlife through loss of habitat due to fencing and overstocking, reduction in biodiversity, risk of introducing disease into wild populations, and genetic contamination of wild stocks (Anonymous 1991, Kahn 1993, Dratch 1993, Miller and Thorne 1993, Twiss *et al.* 1996). On philosophical grounds, turning native animals into, essentially, another species of privately-owned cow may trivialize wild animals and reduce public interest in wildlife and support of wildlife-oriented programs (Geist 1985, Posewitz 1993, Samuel and Demarais 1993). Finally, creation of a legal market for illegal wildlife parts or live animals, diversion of public funds from other wildlife programs, and regulation of wildlife issues by an agricultural branch of government (Kahn 1993, Wheaton *et al.* 1993) could dismantle some basic tenets of wildlife conservation (Geist 1988) and result in unsustainable wild populations (Anonymous 1991, Twiss *et al.* 1996). Many of these conservation concerns are based on real incidents which occurred worldwide (reviewed in

Anonymous 1991, Kahn 1993, Dratch 1993, Miller and Thorne 1993, Wheaton *et al.* 1993, Twiss *et al.* 1996). Legislators must learn from these past problems created by game farming and base proposed policies and regulations on sound ecological or conservation principles.

We currently have more than 264 game farms in Saskatchewan (only includes elk, moose, white-tail deer, mule deer and caribou farms and not exotic species, Anonymous 1998). SAF and Saskatchewan Environment and Resource Management (SERM) anticipate an industry growth rate of 15-20% per annum (Anonymous 1998) and have drafted proposed policies to regulate game farming in the stakeholders document, "Proposed Provincial Policy for Game Farm Development in Saskatchewan." We urge everyone to critically examine this document (available on the Internet at <http://www.agr.gov.sk.ca/saf/live/sthcnsdc.htm>). Although the document identifies many relevant concerns, several proposals are distressing. One such proposed policy would permit game farming on Crown, cultivated lease land because "These lands have limited value as wildlife habitat" while another would allow farmers to live-trap animals attempting to enter game farm pens. Trapped animals would either be slaughtered (implied to be the best option) or released after disease testing (Anonymous 1998). Finally SAF and SERM are evaluating public opinion using what appears to be a biased questionnaire, one that could be construed as designed to transfer some powers of wildlife regulation from SERM to SAF, i.e. from a wildlife to an agricultural branch of government. Overall, the tone of these documents and the short, 1-2 month consultation period loosely ending March 9 suggest environmental short-sightedness (*sensu*

Wilson 1992) and lack of concern for public opinion and for the welfare of Saskatchewan ecosystems. Twiss *et al.* (1996) warned Canadian policy makers and legislators not to ignore public opinion or ecosystem health if viable wildlife populations are to exist. Farming of native wildlife is illegal in British Columbia, New Brunswick, Newfoundland, Nova Scotia, Prince Edward Island, Wyoming and Oregon (V. Geist pers. comm., Twiss *et al.* 1996). Despite proposed socio-economic benefits of game farming, residents of these jurisdictions favoured the existence of wildlife in perpetuity.

When dealing with agricultural issues, one road block conservationists may face is that industry representatives either ignore or fail to understand that wildlife and wild places have intrinsic value and that healthy ecosystems provide many environmental benefits, e.g. water purification, sulphate reduction, carbon dioxide fixation, fertilization, oxygen production (Purves *et al.* 1992). Many arguments are consequently simplified to economics. In addition to the biological, philosophical, and political concerns outlined above, the game farming issue has serious economic complications for both rural communities and the general public (Anonymous 1991, Twiss *et al.* 1996). For instance, during 1991, Saskatchewan residents spent about \$173 million dollars on both consumptive and non-consumptive wildlife-related activities, and an additional \$130 million dollars on recreational fishing (Filion *et al.* 1994). These dollar values do not include rural economic benefits from out-of-province visitors but nonetheless clearly demonstrate that wildlife and habitat are important to Saskatchewan residents. Compared to income from wildlife-related activities, only \$3 million was earned by Saskatchewan farmers

from the sale of velvet and venison in 1996 (Anonymous 1998). Income from sales of breeding stock was not available and may only represent a short-term, non-sustainable benefit as the industry grows and the demand for breeding animals declines (Anonymous 1991, Twiss *et al.* 1996, SAF Web-page). Thus, even from an economic stand point, we question why our provincial government is willing to risk the health of Saskatchewan ecosystems for the economic benefit of a few individuals. In addition, there are regulatory, enforcement, and compensation costs (Twiss *et al.* 1996) which may or may not be funded by the industry, particularly at the current game farm license fee of \$100 per year (SAF Web page). For instance, a 1991 epidemic of bovine tuberculosis (TB) in Alberta resulted in the slaughter of about 2,400 game farm elk (Miller and Thorne 1993, Twiss *et al.* 1996). About \$15 million in public funds were used to compensate game farmers, with an additional cost of \$100 million being borne by Agriculture Canada (Pybus 1994 in Twiss *et al.* 1996). This TB epidemic was attributed to game farm elk imported from Montana (Anonymous 1992, Miller and Thorne 1993). Also, in a survey of 50 US and Canadian wildlife agencies (with a 90% response rate), Wheaton *et al.* (1993) determined that sportsman's dollars or public funds have largely subsidized game farming because current farming license and fee revenue generally has not paid for regulation of the industry. Given a predicted average compound growth rate of 24% per annum on game farm investments (SAF Web page), if game farming is to develop in Saskatchewan, then the public should not subsidize any aspect of this industry. Subsidies and conservation issues should be just part of public concern over game farming. We should also be concerned with the efficacy of government regulation,

underscored by two recent events in the prairie provinces. In February 1998, a third cow in Manitoba tested positive for bovine TB which resulted in a scare for Manitoba and eastern Saskatchewan Farmers (Canadian Press 1998, Robertson 1998). This disease which could seriously threaten export of Canadian beef still exists despite rigorous testing by provincial and federal agencies. Other diseases transmitted between cattle and game animals could also threaten Saskatchewan's beef industry include haemorrhagic disease, blue tongue, and possibly chronic wasting disease (Dulac *et al.* 1988, Jessup *et al.* 1990, Duckworth 1998). Saskatchewan game farm policies and regulations must be based on proven disease testing protocol. In addition, Manitoba recently demonstrated the difficulty with regulating wildlife capture issues. In late 1995, the Manitoba government announced intentions to allow commercial elk ranching in the province (Friesen 1998). During the next two winters, the province live trapped wild elk for breeding stock. Although this trapping was supposed to be tightly controlled by the government, unregistered elk started appearing. Rather than punish criminal game farmers for clear violation of game laws, the government declared a two-week amnesty period so that all illegally held elk could be registered. Eighty-eight animals came in as a result (Freisen 1998). Given this lack of integrity among some game farmers, who will obtain financial benefit from these animals, the government basically legitimized wildlife law infraction and trivialized wildlife.

These captured wild animals have now become livestock and are being sold out of province, despite the presence of *Parelaphostrongylus tenuis* in Manitoba. *P. tenuis* is a nematode parasite that causes nervous disorder and paralysis in several species of

ungulates (Anderson 1972). Manitoba elk have been purchased by at least one Saskatchewan farmer (pers. comm., name kept private). These elk underwent quarantine in Manitoba and are currently under quarantine in Saskatchewan. Although white-tail deer are the typical hosts for *P. tenuis*, studies have shown that elk can also carry low level infections (Samuel *et al.* 1992) and thus importation of these Manitoba animals could pose a high risk to Saskatchewan wildlife. In some species of ungulates, importation tests may be inadvertently fooled by normal antiparasite treatments- e.g. Ivermectin can temporarily stop shedding of larvae without eliminating infections (Kocan 1985). Are testing protocols sensitive enough to prevent false negatives and keep Western Canada *P. tenuis* free? Our literature review suggests not. Of note is that the majority of literature on the population effects of *P. tenuis* have focused on moose (reviewed in Schmitz and Nudds 1994) because this species is the most threatened ungulate where *P. tenuis* exists naturally. However, this parasite is also lethal to mule deer (Tyler *et al.* 1980). If game farming allows *P. tenuis* to jump the current ecological barrier preventing a westward spread, the unknown risk to mule deer populations may be high considering the large overlap in range and habitat use between whitetails and mule deer in Saskatchewan. Policy and regulations based mainly on economics and hearsay will fail ecosystems. Instead, we must learn from the biological literature and errors of other jurisdictions. However, the onus to demonstrate sound environmental policy before further developing game farming in Saskatchewan falls squarely on the industry and ministries promoting game farming. Post-hoc policies to clean-up foreseeable problems are no longer acceptable. Principles in the Saskatchewan Prairie Conservation

Action Plan (in which SERM and SAF are members) and the Canadian Biodiversity Strategy should further guide development of game farm policies and regulations (Anonymous 1995, PCAP Committee 1998). These documents were developed through cooperation by conservation, agricultural and governmental partners and recognizes that sustainable agriculture can exist with and promote healthy ecosystems, but only if legislation occurs with an ecological perspective. Without such an approach, the long-term existence of our ecosystems will be jeopardized (Anonymous 1995, PCAP Committee 1998) and we risk the French experience where game farms are developing from meat production into agro-tourism spots for wildlife viewing (Brelurut *et al.* 1995). SAF and SERM state that the Saskatchewan game farm industry should develop "in harmony with the management of sustainable wildlife populations and their public uses" (Anonymous 1998). However, the political process currently being used to promote game farming in Saskatchewan appears to be economically oriented and conservation disoriented. The complete absence of literature review and lack of philosophical consideration in the proposal policies (Anonymous 1998) reflect negligence for wildlife and disregard for the majority of people in this province. We want SAF and SERM to base policies on sound biological principles and existing conservation goals, fairly assess public opinion and allow a second consultation period for the public to review revised policies before submission to Cabinet.

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Viceroy - Cranberry flats, South of Saskatoon

Juhachi Asa

NOTES & LETTERS

GREAT HORNED OWLS WITH BROOD OF FIVE

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Horned Owl Young (5)

Bittern Lake, Alberta

Bendire, in 1982, seems to have been the first to record the marked regional differences in clutch size in the Great Horned Owl. This owl lays fewer eggs in the south and east and has a larger clutch in the north and west. Dr. William L. Ralph reported to Bendire from Indian River, near Titusville, Florida, that 60% of his Great Horned Owl nests contained only a single egg. In contrast, Bendire reported that in early March 1875, J.W. Preston found a nest with five eggs near Baxter, Iowa. All these eggs hatched. In Plumas County, California, Charles C. Neale took a set of five eggs. In Wyoming, Charles F. Morrison was said to have taken a set of six eggs, assuming his identification was correct.¹

Regional differences in clutch size have persisted. In Massachusetts, two eggs were the standard clutch in A.C. Bent's personal experience.² In Ohio, Jack Holt's 1964-1992 long-term study found 284 broods with one young, 584 with two, 40 with three and only one brood with four; for an average of 1.7 young per successful nest.⁴ Higher average brood sizes occur in Saskatchewan (2.21, n=3095 successful nests, CSH) and Alberta (2.37, n=494 successful nests, EP). In this century we have located only one published report of a five-egg clutch; a nest near Belvedere, Alberta, collected by A.D. Henderson.³

The purpose of this note is to add three more nest records with five young. On May 1979 ETJ banded five young, 2.5 to three weeks old, in an aspen 25 feet (7.6 m) above ground at Bittern Lake, Alberta. On 22 April 1983 ETJ and EP visited another nest with five young, 45 feet (13.7 m) above ground in a Balsam Poplar near Sherwood Park, Alberta, but only four were large enough to hold a band. CSH has never encountered a brood of five although he has banded 82 successful nests with four young, 492 nests with one young, 1570 nests with two young, and 999 nests with three young. One of CSH's nest finders, Pete Hill, had a nest of five young east of Duval, Saskatchewan in late May 1956. This nest was only nine feet above ground in willows; the young

were easily visible and readily counted from the seat of Hill's WD9 tractor.

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Golden Plover

Stan Shadick

MY FIRST GOSHAWK NEST

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On 5 May 1996 I was searching for shed deer antlers in aspen forest about ten miles west of Sonningdale when a pair of fairly large, swift-flying, tree-dodging hawks swooped at me. I quickly found two nests, about 35 yards apart. I didn't know what species they were.

On 11 May I returned and photographed the perched adult male with my telephoto lens. This confirmed his identity as a Northern Goshawk (Fig. 1). I left some camouflage netting for a future blind, but kept my early visits short, even though the site was 90 minutes travel from my home.

On 26 May I brought in lumber for a future blind. The female was crouched on her nest, almost invisible. On 2 June, as I put a ladder up an adjacent tree, the female took off from the nest. The male dived repeatedly, no doubt in an effort to frighten me off. I got further photographs of the male. On 9 June the female left her nest only after I had climbed the ladder. On 15 June a sheet of plywood was added to my blind, a cover behind which I could hide and take photographs. I stayed only 15 minutes. More plywood was added on 23 June to complete the blind.

On 30 June I came at 7 p.m. and was greeted by the female who dived at me before I climbed the ladder. I got my first sight of the two white, downy young, with black beaks and black eyes. It was a warm evening so I stayed for 90 minutes.

I returned at 5.50 p.m. on 7 July. The two chicks roused up. For the first time, they backed up to pass excreta over the edge of the nest. Feathers were

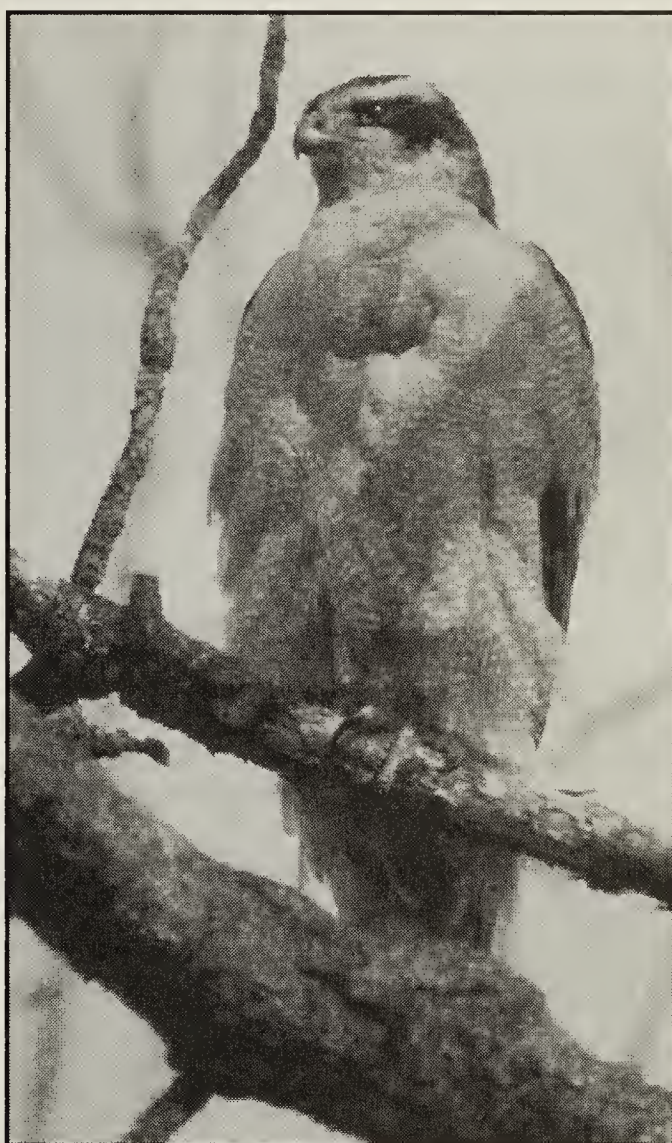


Figure 1. Goshawk, Saskatoon Area

developing. They were now stretching, flapping their wing stubs, and able to rip open the mammal the adult had brought, perhaps a ground squirrel from the alfalfa field 300 yards distant. They paid no attention to clicking of my camera shutter. I stayed till 8 p.m. but saw neither parent; presumably both were away hunting food for their hungry young.

At 5.45 a.m. on 15 July the female dived at me when I came, but then stayed away, except once to visit the nest briefly, the first such occasion with me in the blind, to bring unidentified food at 6.30 a.m. The arrival of food caused a loud chattering by her chicks.

At 5.45 p.m. on 18 July, I climbed into the blind without seeing an adult. Later the male streaked in, dropped an unknown prey item, and quickly left the nest. It was my first sighting of him since 23 June. The female didn't appear during my two hour stay.

On 21 July at 3 p.m. the nest was empty, but one of the young gave hunger calls for five minutes at 3.50. Again at 4.25 I heard the same or the other young calling from the ground. I searched but could not find them, and left at 5.45 p.m. On 25 July, the male swooped in and

dropped prey on the ground; the young responded. I rushed over but again the young must have been well hidden for I could not find them. They seem to have left their home range by 11 August, when nothing was seen or heard. I realize now that the 1996 nest was unusually late, since at this latitude in a normal year the young should have fledged by about 1 July.

In 1997, they used the second nest about 35 yards distant. The blind was too far away, so I made only two visits during the season.



Lesser Snow Goose

G. W. Beyersberge

PRAIRIE SHOREBIRD MONITORING PROGRAM

Location: Prairie Canada - Alberta, Saskatchewan, and Manitoba.

Project: To identify important lakes/wetlands used by Arctic breeding shorebirds during migration as staging/resting areas and by populations of prairie-nesting shorebirds. Participants would conduct counts on the lake(s) and provide information on species and numbers of shorebirds using the site during each daily count.

When: Shorebirds are found in the prairies from late April through October. Spring migration normally occurs from the first week of May into the second week of June with the peak in late May. Fall migration normally occurs from the first week of July through late September, with peaks in late July (adults) and the middle of August (juveniles).

Commitment: Repeat visits to a site during the peak spring and fall migration periods are encouraged in an effort to catch the peak numbers of the different species of shorebirds that may use the site. However, the number of visits is totally at the discretion of the volunteer.

Skills: Individuals must be able to identify shorebirds in the field, and count and/or estimate the numbers of birds using the site.

Logistics: Participants must supply their own transportation. A data form and instructions will be provided to volunteers for reporting observations.

Equipment: Binoculars and/or spotting scope and notebook.

Contact:

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The greenish bark of aspen is photosynthetic.

DRASTIC DECLINES IN SHARP-TAILED GROUSE AND AMERICAN BITTERN

CHARLES ANDERSON, RR #1, Box 13, Rose Valley, SK S0E 1M0

I farm in parkland habitat, with many good marshes and wetlands, five miles west of Ponass Lake (15 miles north and four miles east of Quill Lake village, just six miles west of the western boundary of the area covered by Hooper's book, *Birds of East-central Saskatchewan*). I am very concerned about two species.

The deep, sucking, slough-pump noise of the American Bittern was commonly heard and birds were regularly seen every summer until about 1988, when their numbers crashed. For the first time in my life I went without hearing or seeing a bittern all summer for three consecutive years, 1991, 1992 and 1993. In 1994 I found a nest with four eggs, then saw and heard none in 1995 and 1996. Several were heard and one was seen in 1997.

The Sharp-tailed Grouse was also common until the mid-1980s with two dancing grounds present on my land. For six years, 1992-1997, inclusive, I saw only a few adults and not a single covey of young. In 1997 I didn't even see an adult until harvest, when a hen with three chicks appeared from a late hatch. My neighbours have remarked that they don't have any on their land,

either. I think the hunting season should be closed in Zone 40, which stretches from Kelvington and Wynyard north to Naicam and Greenwater Lake.

Not all the bird news is bad. I found my first four American Avocet nests in 1991 but they were flooded out with heavy rains; a nest with four eggs on the west side of Ponass Lake in 1994 was successful. Swainson's Hawks became commoner near Rose Valley as more land was cleared; I saw my first pair about 1984 and knew of three pairs in 1994, but only one pair nested in 1995 through 1997.

A Northern Hawk-Owl perched in my yard for a week in December 1996. My first-ever sighting of a Great Gray Owl was on 4 January 1997; not too long later I saw another near Archerwill.

The Western Kingbird, which has nested in Quill Lake village since about 1980, first appeared on my farm about 1985; by 1994 I had three pairs in my farmstead and another pair five miles farther east at Ponass Lake.

I wish to thank Stuart Houston for help in preparing this note.



Aster from Asteria, goddess of the stars, who cried when she saw no stars on earth and her tear drops turned into flowers.

RARE SIGHTING OF A PAINTED BUNTING

BRENDA FLOOD, Box 475, Leader, SK S0N 1H0

On May 26, 1997, I received a phone call at 6:15 pm from a friend of mine from Burstall, Saskatchewan. Elfreda LaSalle and her husband Lowell were looking at a very colourful bird at their backyard feeder. They were hoping I could help them identify it.

Elfreda began describing a bird with a very red breast, bluish purple head and yellowish green back. As I listened to her description, I paged through my bird guide asking for more details. I was thinking it had to be a Rose breasted Grosbeak, or a Purple Finch....but in my mind, she was describing a Painted Bunting that I had seen only in pictures. Or was she describing someone's escaped pet Gouldian Finch?

After much discussion about the size and other field markings of the bird Elfreda was describing, I suggested they may have a rare sighting of a Painted Bunting. The bird had been at their feeder for three days.

If it had not been so close to dusk that evening, my husband John and I would have drive to Burstall to look at this one! However, the sun was about to set and Leader is about 45 minutes away.

I was, needless to say, delighted when I saw Elfreda this fall and she produced these pictures they had taken. Indeed it was a Painted Bunting (*While the photographs prove the identity of the birds they were, sadly, not suitable for publication - Editor*).



The Gerard Clan - Banding Ferruginous Hawks and Merlins, Matador pasture near Kyle, Saskatchewan, July 1997.

NATURE LIBRARY

CREATOR OF A SYMBOL: FREDERICK GEORGE BARD

JEROME J. PRATT. 1997. Whooping Crane Conservation Association, 3000 Meadowlark Drive, Sierra Vista, AZ 85635. \$1.75 U.S.

Fred Bard, an employee of the Saskatchewan Museum of Natural History from 1925 to 1946 and its director from 1947 until his retirement in 1970, died on 23 September 1989.

This *Blue Jay*-size, 24-page booklet, is Jerry Pratt's memorial to Fred Bard. Jerry reminds us how Bard spearheaded the drive to save the Whooping Crane from extinction, and reproduces two Whooping Crane posters distributed from the Saskatchewan Museum of Natural History. He gives the text of the 1970 newspaper report when Bard received an honorary LL.D. degree from the University of Regina. He reproduces, without mention of its

source nor of permission granted, the memorial to Bard, written by Ruby Apperley and Fred Lahrman, and published in *Blue Jay* 48:168-170, 1990. He also reproduces Bard's reminiscences, given at the annual meeting of the Whooping Crane Conservation Association meeting in Regina on 4 October 1980.

This little booklet, sold at cost, is a bargain. Anyone with an interest in Whooping Cranes or in Fred Bard, or both, will treasure it.

Reviewed by C. Stuart Houston, 86 University Drive, Saskatoon, SK S7N 0J7



White-tailed Jack Rabbit

Wayne Lynch

BIRDFEEDING 101 A TONGUE-IN-BEAK GUIDE TO SUET, SEED AND SQUIRRELLY NEIGHBOURS

(Teacher Resource) by Richard E. Mallery, Main Street books, Doubleday, Toronto, 1997; illustrated by Linda Decker; ISBN 0-385-48700-2; 194 pages, \$16.95.

Most of us naturalists are avid birders who enjoy injecting each day with some humour. Birdfeeding 101 provides a "course of instruction" that will answer some questions asked by even the most experienced birder.

The chapters are set up like a series of mini-courses with a twist. First, there is basic information, then a Recap and Reinforce section, followed by letters to Dick E. Bird (Ann Landers style), Tongue-in-Beak Titbits, questions and discussion topics, and Bird-Brained Trivia. The author sets up the pages in a reader-friendly style, with quotes usually from Dick E. Bird, the book's mascot), puns and poems, clever cartoons and illustrations, and other notes. for example,

The heart fills as the birdfeeder empties. (p. 48)

Although this book is largely non-fiction, it does have a villain, Hairy Houdini, the notorious squirrel. The author includes a wanted poster for this outlaw and affectionately discusses its interference with bird feeding throughout the book.

Ground squirrels will hang out around the base of the birdfeeder like teenagers at the mall. They look like they are loitering, but they're actually there for a purpose..... (p. 72)

Some of us are in the process of signing our gardens to achieve

maximum wildlife habitat. This book provides useful information on planning such a garden. It is also good at explaining why we do what we do:

It is important to provide water in both summer and winter. Birds constantly tend to their feathers, which must be kept clean and healthy to ensure proper insulation and mobility, especially in winter months. Various water heaters are available to keep water from freezing in colder climates. (p. 47)

Seed trays with drainage holes will quickly clog with wet seed, droppings, and hulls. Screening works much more efficiently. (p. 53)

Many points are made with the author's insatiable sense of humour. He admits that feeding birds regularly is expensive but nevertheless has therapeutic value:

Feeding birds lets you turn off your lights for awhile, park your brain, and idle your engine. some people never get the opportunity to feed birds. Some are never exposed to the joy associated with watching colourful birds pick their pockets. (p. 146)

On a more serious note, the chapter entitled "Seeds for Thought," describes the importance of interconnectedness and of habitat protection.

The dictionary defines a bird's

"habitat" as "all the elements and conditions that satisfy the living requirements of a bird, so that it can successfully produce offspring in sufficient numbers to perpetuate its kind." (p. 96)

The book provides useful information for students' wildlife reports or for your article writing and interpretive repertoire. There are many facts to use in science lessons on the vertebrates, namely birds:

Nuthatches work a tree differently from other birds. They search tree bark from the top down, giving them

a different angle on bugs hiding in the bark that other birds miss. (p. 96)

At the end of the book is a list of sources of bird-feeding supplies, a glossary and an index for easy reference. The mood throughout is optimism. This book is a joy for all birders and would make a fine gift. I will end this review with a quote from page 144:

In a mad world nature is sanity's only hope.

Reviewed by *Judith Benson*, Saskatoon SK.



Sandstone outcrops near Climax, Saskatchewan

Fred Lahrmo

VULTURE: NATURE'S GHASTLY GOURMET

WAYNE GRADY. 1997. Greystone Books (Douglas & McIntyre), Vancouver, BC
xi + 110 pp., illus., index. Hardcover, \$24.95

Wayne Grady states in his preface that his goal in this book is to "encourage us to reexamine our attitude towards vultures and condors in particular, as we must reexamine our attitude towards nature in general, and help us to make room in our hearts for all creatures, no matter how they make their living."

It is by no means clear, however, that people who have not already made room in their hearts for vultures will even want to open this book. Consider the pocket photo. Readers accustomed to bird books whose covers feature such soothingly familiar images as the imperious glare of the Bald Eagle or the brilliant colours of the Painted Bunting will be startled by the darkly brutish animal shown here. It's a Lappet-faced vulture, an African species of outlandish and unwholesome aspect: bare earlobes, a massive hooked bill, a naked head covered in folded and wrinkled skin, long, lanceolated breast feathers, and an oddly luxurious ruff that creeps over the back of its neck and stands erect behind its long skull. Grady's hunched and sinister poster bird is visually striking but unlikely to inspire a reexamination of attitudes on the part of readers who have already formed the notion that vultures are repulsive. Even less likely to spark reconsideration is the book's title.

But setting these mixed messages aside for a moment, what of the text itself? First, there's not much of it. So numerous are the photos and graphics that only 51 pages (excluding

preliminaries and end matter) are predominantly text. Second, the three chapters are so discrete that each could have been an article in a popular magazine. Indeed, *Vulture* reads more like a collection of articles than a unified work.

The first chapter, *The Value of Vultures*, notes that these "bottom feeders of the bird world," though vilified in some cultures, are revered in others. The chapter moves into an interesting discussion of the evolutionary convergence between the Old World vultures, which belong to the order Falconiformes, and the New World vultures, which were recently moved from Falconiformes into Ciconiiformes, the order that includes storks and herons.¹

The chapter concludes with Grady's answer to the question, "Why should we care about the preservation of vultures?" It's the sort of question that arises frequently during any discussion of creatures that fail to meet common human standards of agreeableness in appearance and habit. Grady eschews the easy utilitarian response—that vultures "help keep us from becoming knee-deep in squirrel carcasses"—and opts for the more enlightened one. We should care about vultures because they exist.

The second chapter introduces individually the five New World species (the two condors appear in the final chapter) and relates some of the

characteristics of the group's nesting, roosting, and feeding behaviour. Like Turkey Vultures, the Greater Yellow-headed Vultures of South America forage by smell and are, according to Grady, "arguably better at finding food even than turkey vultures, which can sniff out a dead field mouse under a pile of manure from a great height."

In his third and final chapter, titled *El Condor Pasa*, Grady gives a concise account of the conservation efforts that have been made on behalf of the California Condor and the Andean Condor. "Perhaps because the Andean condor is still a mythological bird in South American society and folklore, its situation is somewhat less precarious than that of its California counterpart," Grady notes.

A brief list of further readings (nine books, six articles) and an index conclude the book.

Vulture is enthusiastically designed. Over half of the book's space is given over to photos, illustrations, and brief extracts from the text that are given special typographical treatment. The sidebars, the type, the use of colours and screens, the illustrations (many of which are of historical interest), and the photos combine to produce a book that is visually lively—even distracting, some might say. The photos are uniformly excellent.

Many of the captions are less satisfactory, however. One (page 37)

labels a turkey vulture a black vulture. Another (page 19) claims that a vulture's feet are designed for ripping. Several neglect to identify the species shown. The bird in the astonishing jacket photo is unidentified. Another omission—curious because both author and publisher are Canadian—is a discussion of the reasons for the northward expansion of the range of the Turkey Vulture. Nor is there mention of the number of vulture species worldwide. A list of these 22 birds, with notes on size, range, and population status for each, would have been a welcome addition. The species name of the Lappet-faced Vulture is consistently misspelled.

In sum, then, *Vulture* aims at a wide audience. It mixes graphics and text to provide a quick introduction to aspects not only of the natural history of these birds but of the way they have been perceived by various human cultures. Finally, the book will be of as much interest to those interested in book design as to those interested in vultures.

1. Some may find it difficult to imagine that the Turkey Vulture has more in common with the Greater Flamingo than it does the Golden Eagle, but the 41st Supplement to the American Ornithologists' Union Checklist of North American Birds, published in July 1991, would suggest that you prepare yourself for field guides in which vulture and flamingo share a page.

Reviewed by *Bob Kohlmeier*, 22 Kenilworth Avenue, Toronto, ON M4L 3S9



Wolf Lichen contains a toxin, vulpinic acid, used in the past to poison wolves.

OBITUARY

IN MEMORIAM Rose Isabel McLaughlin 1907-1998

By W. Victor Beaulieu

Rose McLaughlin was born on July 2, 1907 in Odessa, SK, a child of Mead and Adelaide Seaman. She died on January 1 1998 in Indian Head.

Rose grew up in Francis, SK. Here she completed her schooling and from there went on to Normal School in Regina, receiving her teaching certificate in 1927. She taught for ten years in country schools in the Lewvan-ellowgrass district.

She married Roy McLaughlin of Lewvan on July 8, 1938. They moved to Archydal, SK. Their children, Hugh, Heather and Margaret were born here where Roy was a grain buyer for the National Grain Company. In 1949 Roy was transferred to Indian Head. Years later, in her *Grainbuyer's Wife*, (1989) Rose wrote sympathetically of her years in Archydal.

Rose's writings in the Indian Head History Book show how observant she was and how attuned to the life around her. In their History Book she writes: "Coming from the open prairies to the edge of the parkland, just before gas and electric heating were widely used, we were intrigued by the smell of poplar smoke from the morning fires and also by the calls of the mourning doves in the trees at the Experimental Farm."

Rose and her husband were very active members of their community, contributing to and supporting many organizations such as St Andrew's United Church, the Horticultural Society, the Indian Head Public Library (where

she was a member of the board and the librarian). Rose was one of the original members of the Book Club. For 47 years she enjoyed contributing to the thoughtful discussions when the members gathered to review the books and authors they had selected.

In 1959 Rose resumed teaching at Lake Marguerite and Glenn Lynn schools and in the Indian Head Public School. She retired in 1970.

Hugh remembers his mother's love of writing. She regularly contributed a column entitled "My Own Backyard" to the Family Herald and the Leader Post for a number of years. The manuscript of the "Grainbuyers Wife" had won the Saskatchewan Writer's Guild Award for non-fiction before it was published.

Rose taught Lorne Scott (now Minister of the Environment and Resource Management of Saskatchewan) at the Glenn Lynn country school in 1961 when he was in Grade VIII. He recalls her interest in the outdoors, horticulture and literature. She loved teaching, and always searched for new ways to make her classes more interesting. It was a real pleasure for her and her students to go on a nature hike. At school she maintained a "signs of spring" chart for the students to record their first observations of birds and flowers. In 1966 Rose and Roy took Lorne Scott, his brother and cousin to the summer meet of the Saskatchewan Natural History Society at Rocanville. Later, in 1980, as president of the Natural History Society, he was very proud to present

Rose with the Natural History Society Conservation Award. He explained that Rose was one of the first people to foster his interest in the environment by her teaching, her love and concern for people and her sharing of the enthusiasm that she felt for her natural surroundings. Lorne was fond of telling how she inspired his interest in nature. At the end of his year in a country school with Mrs. McLaughlin as his teacher, he said "he and other older boys had pretty well hung up their gopher traps, slingshots and rabbit snares."¹

Rose and Roy were two of the founding members of the Natural History Society at Indian Head. This local society was formed after a very successful summer meet held by the provincial society in Indian Head in 1971. The meet was organized by Lloyd Peterson, Mary Skinner and Lorne Scott. They involved many of the people of the local community. Rose with her students provided a very attractive and interesting individual cover for each copy of the program used at this meet.

Rose in her quiet, cheerful manner supported and helped both the local and the provincial societies in many ways. She worked on the executives, shared her knowledge with other people at the meetings and on field trips, and reported these activities in her articles in the local weekly newspaper and from time to time in the Leader-Post or Star-Phoenix. The members of the Indian Head Society remember Rose's friendly smile inviting them to share her joy and love for a flower blooming on a hillside. After Rose retired from teaching she spent much time working on a private member's bill to give legal protection to the Prairie Red Lily, Saskatchewan's provincial flower. To indicate her keen sense of observation and the quiet joy Rose had in her surroundings I quote the last

paragraph of the chapter "Autumn Comes to My Own Back Yard" from her book *Grainbuyer's Wife*.

"The busy days slip by. Fall brings two kinds of weather that are perfect for canning. They are dead-still smokey days when filtered sunlight lies red on the doorstep, and I bless the absence of glaring sun and wearying wind as I make my frequent forays to the chip yard or the vegetable garden. Then there are the chilly overcast days when the trees shoulder away from the rough wind, and I close the kitchen door, glad for the warmth of the cookstove, and the appetizing odour of bubbling chili or sweet plum jam. "And over my shoulder winter is watching....."

We are thankful for having known Rose. We celebrate her long life and have lasting memories of her sharing with us her joy in the natural beauty surrounding us. Her philosophy of life, "Count only the sunny hours," will remain her legacy to us all.

We thank Lorne Scott and Rose's family-Hugh and Margaret McLaughlin for their assistance in the preparation of this tribute.

1. BELCHER, M, *The Isabel Priestley Legacy*, p.163.

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